# THE IMPACT OF LEVANT BASIN OIL AND NATURAL GAS DISCOVERIES ON LEBANESE-ISRAELI RELATIONS

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE
General Studies

by

GEORGE AL DARAZY, LTC, LEBANESE NAVY
B.A., Lebanese University, Jal El Dib, Lebanon, 2007

Fort Leavenworth, Kansas
2014-02

# REPORT DOCUMENTATION PAGE

*Form Approved*
*OMB No. 0704-0188*



| **1. REPORT DATE** *(DD-MM-YYYY)* | **2. REPORT TYPE** | **3. DATES COVERED** *(From - To)* |
|---|---|---|
| 12-12-2014 | Master's Thesis | FEB 2014 – DEC 2014 |

**4. TITLE AND SUBTITLE**

The Impact of Levant Basin Oil and Natural Gas Discoveries on Lebanese-Israeli Relations

**5a. CONTRACT NUMBER**

**5b. GRANT NUMBER**

**5c. PROGRAM ELEMENT NUMBER**

**6. AUTHOR(S)**

George Al Darazy, Lieutenant Colonel

**5d. PROJECT NUMBER**

**5e. TASK NUMBER**

**5f. WORK UNIT NUMBER**

**7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)**

U.S. Army Command and General Staff College
ATTN: ATZL-SWD-GD
Fort Leavenworth, KS 66027-2301

**8. PERFORMING ORG REPORT NUMBER**

**9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)**

**10. SPONSOR/MONITOR'S ACRONYM(S)**

**11. SPONSOR/MONITOR'S REPORT NUMBER(S)**

**12. DISTRIBUTION / AVAILABILITY STATEMENT**

Approved for Public Release; Distribution is Unlimited

**13. SUPPLEMENTARY NOTES**

**14. ABSTRACT**

The discovery of huge oil and gas fields in the Levant Basin will dramatically change the political, economic, environmental and social situation in the Eastern Mediterranean Region. These discoveries could be a new prospect for bringing both wealth and economic development to each of the countries in the region, and possibly provide them greater opportunities. It could also possibly improve the energy security for countries that have been importers for both oil and natural gas since their inception. With the amount of resources discovered, and depending on their agility and proper management of the new fortune, the Levant countries could join the club of hydrocarbon exporters.

This study seeks to address possible implications for Lebanon and Israel in light of the prospect of discoveries of oil and natural gas reserves offshore. It will review the question of the maritime borders and the controversial positions of the two nations; especially in light of the fact that they are in a state of war. It will also adress the prospects of rising tensions between the two neigboring countries on one hand, and the possible scenarios of cooperation on the other.

**15. SUBJECT TERMS**

Natural Gas and Oil-Lebanon-Isreal- Exclusive Economic Zone- The Levant Basin-Maritime Border

| **16. SECURITY CLASSIFICATION OF:** | | | **17. LIMITATION OF ABSTRACT** | **18. NUMBER OF PAGES** | **19a. NAME OF RESPONSIBLE PERSON** |
|---|---|---|---|---|---|
| **a. REPORT** | **b. ABSTRACT** | **c. THIS PAGE** | | | **19b. PHONE NUMBER** *(include area code)* |
| (U) | (U) | (U) | (U) | 91 | |

**Standard Form 298 (Rev. 8-98)**
**Prescribed by ANSI Std. Z39.18**

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

Name of Candidate: LTC George Al Darazy

Thesis Title: The Impact of Levant Basin Oil and Natural Gas Discoveries on Lebanese-Israeli Relations

Approved by:

_____, Thesis Committee Chair
Peter R. Scheffer, Jr., M.A.

_____, Member
Russell B. Crumrine, Jr., M.A.

_____, Member
Timothy R. Hentschel, Ph.D.

Accepted this 12th day of December 2014 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, Ph.D.

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE IMPACT OF LEVANT BASIN OIL AND NATURAL GAS DISCOVERIES ON LEBANESE-ISRAELI RELATIONS, by LTC George Al Darazy, 91 pages.

The discovery of huge oil and gas fields in the Levant Basin will dramatically change the political, economic, environmental and social situation in the Eastern Mediterranean Region. These discoveries could be a new prospect for bringing both wealth and economic development to each of the countries in the region, and possibly provide them greater opportunities. It could also possibly improve the energy security for countries that have been importers for both oil and natural gas since their inception. With the amount of resources discovered, and depending on their agility and proper management of the new fortune, the Levant countries could join the club of hydrocarbon exporters.

This study seeks to address possible implications for Lebanon and Israel in light of the prospect of discoveries of oil and natural gas reserves offshore. It will review the question of the maritime borders and the controversial positions of the two nations; especially in light of the fact that they are in a state of war. It will also adress the prospects of rising tensions between the two neigboring countries on one hand, and the possible scenarios of cooperation on the other.

# ACKNOWLEDGMENTS

I would like to express my deepest gratitude to my MMAS Committee Chair, Mr. Pete Scheffer, for his excellent patience and motivation. His guidance helped me in all facets of research and in the writing of my thesis. I would also like to thank my committee members, Mr. Russ Crumrine and Dr. Tim Hentschel, for their advice, insightful comments, and assistance.

I express my warm thanks to the staff of the Graduate Degree Program; Dr. Robert Baumann, Dr. Prisco Hernandez, and Mrs. Venita Krueger, for their keen oversight and endless support.

My sincere thanks also goes to the entire staff of Fort Leavenworth's Combined Arms Research Library, especially Mrs. Susan Fowler, the Copyright Coordinator, for providing me with exceptional resource material and research assistance that was critical to the completion of this project.

Finally, this thesis would not be possible without the support of my wife, Nada, and my children, Marc, Ralph, and Chloé.

TABLE OF CONTENTS

Page

MASTER OF MILITARY ART AND SCIENCE THESIS APPROVAL PAGE ..... iii

ABSTRACT ..... iv

ACKNOWLEDGMENTS ..... v

TABLE OF CONTENTS ..... vi

ACRONYMS ..... viii

ILLUSTRATIONS ..... ix

TABLES ..... x

CHAPTER 1 INTRODUCTION ..... 1

Background ..... 1
Primary Research Question ..... 5
Secondary Research Questions ..... 5
Assumptions ..... 6
Definition of Key Terms ..... 6
Scope and Limitations ..... 10
Delimitations ..... 10
Significance of the Study ..... 11
Organization of the Study ..... 11

CHAPTER 2 LITERATURE REVIEW ..... 14

Section 1: Assessment of Oil and Natural Gas Discoveries ..... 14
Section 2: Implications of the New Discoveries ..... 16
Section 3: Impacts of the Maritime Border Dispute ..... 18
Section 4 : Discoveries' impact on relation between the two countries ..... 19
Section 5: Summary ..... 19

CHAPTER 3 RESEARCH METHODOLOGY ..... 23

Section 1: Data Collection ..... 23
Section 2: Credibility of Sources ..... 24
Section 3: Data Analysis ..... 25
Section 4: Summary ..... 27

CHAPTER 4 ANALYSIS .....29

Introduction..... 29
Section 1: Assessment of Israeli Natural Gas and Oil Discoveries ..... 29
Section 2: Implications for Israel..... 35
Section 3: Assessment of Lebanon Undiscovered Oil and Natural Gas Resources ..... 38
Section 4: Implications for Lebanon..... 40
Section 5: The Lebanese-Israeli Maritime Disputed Borders..... 45
Section 6: Options for Resolving the Boundary Dispute..... 52
Section 7: Oil and Natural Gas SWOT Analysis..... 53
Section 8: Discoveries' Impact on Relations between Lebanon and Israel..... 57
Section 9: Summary..... 60

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS .....69

Summary of the Findings..... 69
Interpretation of the Findings ..... 70
Recommendations..... 71
Recommendation for Further Study ..... 72

BIBLIOGRAPHY.....74

ACRONYMS

| | |
|---|---|
| AGP | Arab Gas Pipeline |
| BCM | Billion Cubic Meters |
| EEZ | Exclusive Economic Zone |
| EIA | Energy Information Administration |
| EU | European Union |
| GDP | Gross Domestic Product |
| IEPN | Israeli European Policy Network |
| INSS | Institute for National Security Studies |
| IOC | International Oil Company |
| Km2 | Square kilometers |
| LNG | Liquid Natural Gas |
| OPEC | Organization of the Petroleum Exporting Countries |
| SWOT | Strengths, Weaknesses, Opportunities, and Threat |
| UN | United Nations |
| UNCLOS | United Nations Convention on the Law of the Sea |
| US | United States |
| USGS | United States Geological Survey |

ILLUSTRATIONS

Page

Figure 1. The Levant Basin ..... 2

Figure 2. Lebanese-Israeli border ..... 4

Figure 3. Arab Gas Pipeline ..... 7

Figure 4. Regions of the ocean over which a State may exercise sovereignty ..... 8

Figure 5. Israeli Natural Gas Fields ..... 31

Figure 6. Israeli Leviathan Gas Field ..... 33

Figure 7. Lebanese EEZ borders in the Lebanese–Cyprus Agreement (2007) ..... 47

Figure 8. The contested area south-west of Lebanon's EEZ ..... 48

TABLES

Page

Table 1. Estimated Natural Gas .....20

Table 2. Recent Natural Gas Discoveries in Israel .....34

Table 3. Lebanese Findings using SWOT Analysis .....54

Table 4. Israeli Findings using SWOT Analysis.....56

# CHAPTER 1

# INTRODUCTION

> Let me tell you something that we Israelis have against Moses. He took us forty years through the desert in order to bring us to the one spot in the Middle East that has no oil.[1]
>
> — Golda Meir, *The Overcomers*

## Background

This famous comment made in 1973 remained true for many years. For decades, it looked like this part of the Middle East, which includes Israel, was deprived of the abundant energy resources that were prevalent in other parts, such as the Gulf countries. However, it seems Golda Meir was wrong about Moses. In March 2010, the United States Geological Survey (USGS) estimated a mean of 1.7 billion barrels of recoverable oil and a mean of 3,450 Billion Cubic Meters (BCM) of gas in the Levant Basin Province.[2] This Basin encompasses approximately 83,000 square kilometers (km2) of the Eastern Mediterranean area and stretches from the Sinai Peninsula to the northern border of Syria, and from the Northern Sinai coast into the Mediterranean Sea to the western side of Cyprus. It includes the underwater geological structure that is located beneath the waters of Lebanon, Israel, Cyprus, Syria, and Gaza strip (see figure 1).[3]


Figure 1. The Levant Basin

*Source:* Energy Information Administration (EIA), Eastern Mediterranean Region, "Overview of Oil and Natural Gas in the Eastern Mediterranean Region," last updated 15 August 2013, accessed 15 April 2014, http://www.eia.gov/countries/analysisbriefs/Eastern_Mediterranean/eastern-mediterranean.pdf.

The discovery of this huge oil and gas field in this Basin will dramatically change the political, economic, environmental and social situation in this region. These discoveries could be a new prospect for bringing both wealth and economic development to each of the countries in the region, and possibly provide them greater opportunities. It could also possibly improve the energy security for countries that have been importers of the oil and natural gas since their birth. With the amount of the resources discovered, and depending on their agility and proper management of the new fortune, the Levant countries could join the club of hydrocarbon exporters. Even the increase of energy

demand over the next two decades, which is related to expected population growth (the population of the region is estimated to grow from 45.3 million in 2010 to between 58 and 62 million in 2030), will not stand as an obstacle to exports.[4]

The prospects are not without their challenges, however. These new discoveries could also prompt new battles over access to oil and natural gas resources. Many fields discovered in the Levantine Basin are located in overlapping areas, where boundaries are not yet delineated, or sometimes disputed. Delimitation, precisely between and inside gas and oil fields, can turn out to be a source for disagreements. In particular, tensions could rise between Lebanon and Israel, neighboring countries with adjacent territories and coasts (see figure 2). Lebanon's southern land borders constitute the majority of Israel's northern borders. Today, this border known as the Blue Line is not definitive. It is simply a line demarcated by the United Nations (UN) in 2000 to determine whether Israel had fully withdrawn from Lebanon.[5] Lebanon and Israel never had direct negotiations over their borders because the two countries have been in state of war since the birth of the State of Israel in 1948.


Figure 2. Lebanese-Israeli border

*Source:* Thomas Blomberg, *Blue Line* (United Nations Interim Force in Lebanon, 2006), accessed 12 September 2014, http://commons.wikimedia.org/wiki/File:BlueLine.jpg.

In fact, the Lebanese-Israeli border did not have a long period of peace compared to other countries surrounding Israel, such as the Egyptian front (Egypt and Israel signed the Camp David peace agreement in 1978),[6] the Jordanian front (Jordan and Israel signed the Wadi Araba Treaty ending the state the war in 1994),[7] and the Syrian front (1974 cease-fire agreement over the Golan Heights).[8] The first direct war (between Israel and its surrounding neighbors) took part in 1948 as part of the Arab campaign against the "Jewish State." Then, after a period of relative peace, Israel invaded Lebanon in 1978 and 1982 in retaliation against the Palestinians, and occupied the southern region until 2000.[9] Hezbollah (an armed militant force headquartered in Lebanon) fought three wars against Israel in 1993, 1996 and 2006; the last one was ended by UN Security Council Resolution 1701, which saw military operations halt without a ceasefire even being announced.[10]

Recently, the dispute over the maritime borders erupted after the discovery of the gas and oil fields along each country's coast. Lebanon claimed that part of the gas field lies within its territorial waters and within its Exclusive Economic Zone (EEZ). As the two countries are still technically at war, they delivered maps to the UN in order to back their claims. At the same time, rhetoric from both parties about using all means necessary, including military action, to defend their national resources appeared in newspapers. However, the huge benefits that both countries can have from sharing the cost of the both exploration and production of new findings may somehow open the way for a new era of cooperation between them.

This study seeks to address possible implications for Lebanon and Israel in light of the prospect of discoveries of oil and natural gas reserves offshore. It will review the question of the maritime borders and the controversial positions of the two nations; especially in light of the fact that they are in a state of war. It will also adress the prospects of rising tensions between the two neigboring countries on one hand, and the possible scenarios of cooperation on the other.

## Primary Research Question

How will natural gas and oil discoveries in the Eastern Mediterranean Sea affect relations between Lebanon and Israel?

## Secondary Research Questions

1. What is the assessment of the new gas and oil fields in the Lebanon and Israel?
2. What is the impact of the energy resources on Lebanon and Israel respectively?

3. How will the disputed Lebanese-Israeli maritime borders affect the new discoveries?

## Assumptions

The accuracy and relevance of this thesis rely on the validity of three critical assumptions. First, Lebanon will make use of this natural gas wealth in the near future. Second, statements by politicians in both countries reflect the prevailing view in each of them. Third, facts, policies, and conditions relating to the thesis will remain the same for foreseeable future.

## Definition of Key Terms

The following terms will be used throughout the study:

Arab Gas Pipeline (AGP). The AGP was conceived in 2001 and its four phases were completed and put into operation, respectively, in 2003 (from Al Arish in Egypt to Aqaba in Jordan), in 2006 (from Aqaba to Amman and then to El Rehab in Jordan), in 2008 (from El Rehab in Jordan to Homs in Syria), and in 2009 (from Homs in Syria to Tripoli in Lebanon) (see figure 3). Another pipeline branching off from the AGP and linking El Arish to Ashkelon in Israel started operating in 2008 and, until it was shut down in April 2012, supplied Israel with Egyptian gas.[11]

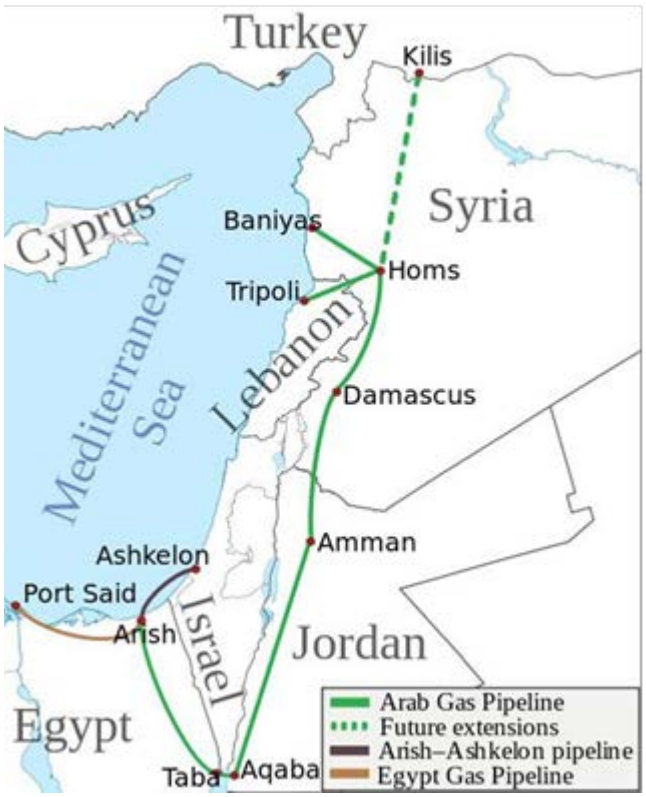


Figure 3. Arab Gas Pipeline

*Source:* Hydrocarbons Technology, "Arab Gas Pipeline," accessed 30 April 2014, http://www.hydrocarbons-technology.com/projects/arab-gas-pipeline-agp/.

Baseline. The baseline is the boundary from which a nation may begin measurements to determine the portion of the adjacent oceans or continental shelf over which it may exercise sovereignty (see figure 4). Except in some special cases, the baseline is the low-water line along the coast.[12]

Exclusive Economic Zone. It is a concept adopted at the Third United Nations Conference on the Law of the Sea (1982), whereby a coastal State assumes jurisdiction over the exploration and exploitation of marine resources in its adjacent section of the continental shelf, taken to be a band extending 200 miles from the shore (see figure 4).[13]

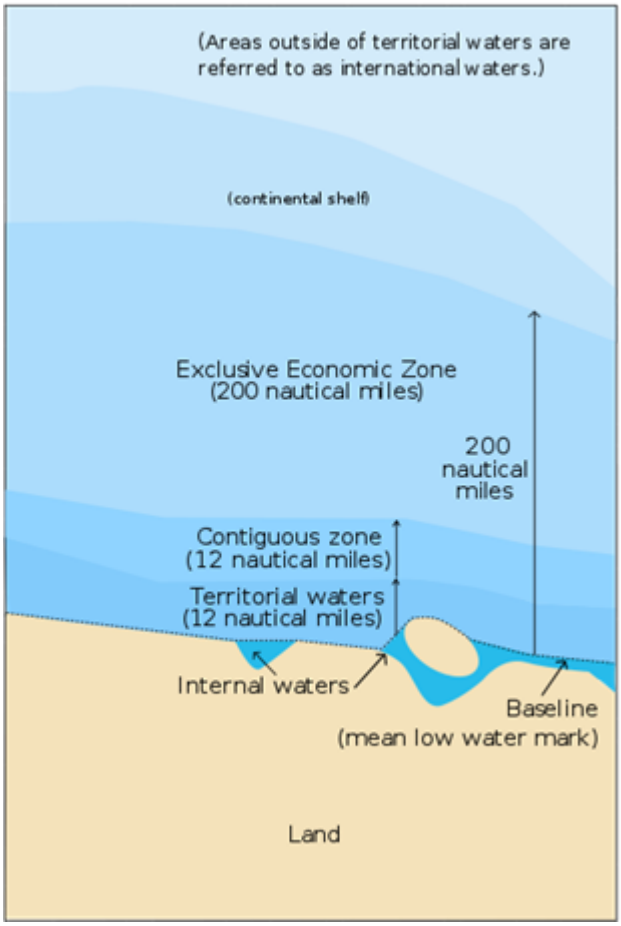


Figure 4. Regions of the ocean over which a State may exercise sovereignty

*Source:* Daniel Hollis, "United Nations Convention on Law of the Sea (UNCLOS), 1982," The Encyclopedia of Earth, 2013, accessed 12 September 2014, http://www.eoearth.org/view/article/156775/.

Greenhouse Gases. A greenhouse gas is a gas in an atmosphere that absorbs and emits radiation within the thermal infrared range. The primary greenhouse gases in the earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Greenhouse gases greatly affect the temperature of the earth.[14]

Liquid Natural Gas (LNG). LNG is natural gas that has been cooled to -162° C, changing it from a gas into a liquid that is 1/600th of its original volume. This dramatic

reduction allows it to be shipped safely and efficiently aboard specially designed LNG vessels. After arriving at its destination, LNG is warmed to return it to its gaseous state and delivered to natural gas customers through local pipelines.[15]

Organization of the Petroleum Exporting Countries (OPEC). OPEC is an international organization and economic cartel whose mission is to coordinate the policies of the oil-producing countries. The goal is to secure a steady income to the member states and to collude in influencing world oil prices through economic means. OPEC has twelve member countries: Iran, Iraq, Kuwait, Saudi Arabia, Venezuela, Qatar, Libya, the United Arab Emirates, Algeria, Nigeria, Ecuador, and Angola.[16]

Seismic Survey. It is the industry's most important exploration tool / technology that uses sound waves to map the subsurface geology. It constitutes indirect measurements that require interpretation by geoscientists. There are two types of Seismic: the Two-Dimensional (2D) Seismic, defined as coarse seismic used in frontier areas to gain an initial understanding of the regional geology, and the Three-Dimensional (3D) Seismic, which is dense seismic enabling a three dimensional image of the subsurface to be constructed. It should be noted that verification of hydrocarbon presence requires drilling.[17]

United Nations Convention on the Law of the Sea (UNCLOS). UNCLOS is an international agreement that defines the rights and responsibilities of nations with respect to their use of the navigational rights, economic rights, pollution of the seas, conservation of marine life, scientific exploration, piracy, and more. The Convention came into force in 1994.[18]

Wadi Araba Treaty. The Israel–Jordan peace treaty signed in 1994, referred to as Wadi Araba Treaty, settled relations between the two countries, adjusted land and water disputes, and provided for broad cooperation in tourism and trade. It included a pledge that neither Jordan nor Israel would allow its territory to become a staging ground for military strikes by a third country.[19]

## Scope and Limitations

The short time available to conduct the research will pose the most significant limitation. As such, the study will narrow its focus on existing data readily available through the Combined Arms Research Library and other online sources. Additionally, the researcher will not be able to interview the key players in this issue given the great distance that separates him from them.

## Delimitations

The study shall concern itself to the Eastern Mediterranean Sea region with only limited relevant references to two countries: Lebanon and Israel. That is to say, it will not study the more widely discussed security challenges intrinsic to other Levant countries unless they directly or indirectly impact the relation between the two countries concerned. Thus, the influence of gas discoveries in the Palestinian territory and Cyprus will be examined very briefly. The role of other key players in this issue, such as Turkey which claims a share of fields extending to northern Cyprus, Syria and others, will not be analyzed. In addition, the study will limit itself to the discoveries in the maritime areas within the sphere of sovereign control of both Lebanon and Israel, and will not discuss any resources onshore.

## Significance of the Study

The thesis deals with the study and analysis of a very important subject with direct impacts on both countries' national security under the international and regional contemporary changes; especially with respect to what is happening the region today. This study will assess the importance of the new discoveries in each of the two countries concerned in hopes to better explore these discoveries in order to meet growing regional demand and possibly even spur future exports. It also addresses impacts on the peace process and potential to move the process forward. This study, therefore, is important because it may provide researchers, scholars, and leaders with valuable information, findings, and recommendations regarding the impacts that the new gas and oil discoveries will have on future relations between Lebanon and Israel.

## Organization of the Study

The study is organized into five chapters. Chapter 1 has served to introduce the study and establish the basic purpose and processes of the study and the research question and questions that are derived from it. It also defined key terms, and presented the limitations, delimitations, and assumptions which were made and stated the importance of the study. Chapter 2 offers a review of the related literature. Chapter 3 presents a detailed design of the study and includes the method of data collection and data analysis. Chapter 4 analyzes research information obtained from the study of the two countries (Israel and Lebanon). Chapter 5 presents the summary of both findings and conclusions and makes recommendations for further research beyond this topic.

---

[1] J. L. McKay, *The Overcomers* (Lake Mary, FL: Creation House, 2014), 76.

[2] Christopher J.Schenk, Mark A. Kirschbaum, Ronald R. Charpentier, Timothy R. Klett, Mickael E. Brownfield, Janet K. Pitman, Troy A. Cook, and Marilyn E. Tennyson, "Assessment of Undiscovered Oil and Gas Resources of the Levant Basin Province, Eastern Mediterranean: U.S. Geological Survey Fact Sheet, 2010-3014," accessed 30 April 2014, http://pubs.usgs.gov/fs/2010/3014/.

[3] William W. Harris, *The Levant: A Fractured Mosaic* (Princetown, NJ: Markus Wiener Pub, 2005), 1-6.

[4] Roby Nathanson, Hadar Weisman, and Amit Loewenthal, *Natural Gas in the Eastern Mediterranean Economic Impacts and Strategic Implications* (Tel Aviv: Friedrich-Ebert-Stiftung and the Institute for National Security Studies, 2013), accessed 12 September 2014, http://www.fes.org.il/src/NaturalGasEconomicImpacts2013.pdf.

[5] United Nations Security Council, *Report of the Secretary-General on the United Nations Interim Force in Lebanon (for the Period from 17 January to 17 July 2000)*, 2000, accessed 12 September 2014, http://www.un.org/en/ga/search/view_doc.asp?symbol=S/2000/718.

[6] Jimmy Carter, "Camp David Accords," *Encyclopedia Britannica*, accessed 30 August 2014, http://www.britannica.com/EBchecked/topic/91061/Camp-David-Accords.

[7] Clyde Haberman, "The Jordan-Israel Accord: The Overview," *New York Times*, 26 October 2010, accessed 30 August 2014, http://www.nytimes.com/learning/general/onthisday/big/1026.html#article.

[8] Israel Ministry of Foreign Affairs, *Israel-Syria Separation of Forces Agreement-1974*, 31 May 1974, accessed 30 August 2014, http://mfa.gov.il/MFA/ForeignPolicy/Peace/Guide/Pages/Israel-Syria.

[9] Jean Aziz, "Gas: A New Approach to the Lebanon-Israel Conflict," *Al Monitor*, 31 December 2012, accessed 30 April 2014, http://www.al-monitor.com/pulse/originals/2012/al-monitor/gas-lebanese-israeli-conflict.html##ixzz3DFllFW3D.

[10] Ibid.

[11] Hydrocarbons Technology, "Arab Gas Pipeline," accessed 30 April 2014, http://www.hydrocarbons-technology.com/projects/arab-gas-pipeline-agp/.

[12] "United Nations Convention on the Law of the Sea, part V, art 57," accessed 30 April 2014, http://www.un.org/Depts/los/index.htm.

[13] Ibid.

[14] Intergovernmental Panel on Climate Change, Annex I, *User Guide and Access to More Detailed Information*, accessed 30 April 2014, http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_appendix.pdf.

[15] Chevron Human Energy, “Liquid Natural Gas,” accessed 30 April 2014, http://www.chevron.com/deliveringenergy/naturalgas/liquefiednaturalgas/.

[16] OPEC, “Organization of the Petroleum Exporting Countries (OPEC),” accessed 30 April 2014, http://www.opec.org/opec_web/en/index.htm.

[17] Sverre Strandenes, “Eastern Mediterranean: An Update on Hydrocarbon Exploration,” Petroleum Geo-Services, 17 February 2014, accessed 30 September 2014, http://www.hazliseconomist.com/uploads/speeches/2014/Sea%20of%20Europe/Sverre%20Strandenes%20PPT.pdf.

[18] United Nations Division for Ocean Affairs and the Law of the Sea, “The United Nations Convention on the Law of the Sea,” accessed 30 September 2014, http://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm.

[19] Haberman, “The Jordan-Israel Accord: The Overview.”

# CHAPTER 2

# LITERATURE REVIEW

This chapter reviews key points and general themes within current literature including findings as well as theoretical and methodological support for the natural gas and oil discoveries offshore Lebanon and Israel and their impacts on potential relationships. The review of the related literature for this study is organized as follows: The first section includes issues related to the assessment of oil and natural gas discoveries in the Levant Basin in general, and then as it pertains to Israel and Lebanon. The second section includes previous research concerning the implications of these discoveries on both countries. This involves examining the economic, social, and security impacts of natural gas and oil resources. The third section continues by presenting the disputed Lebanese-Israeli maritime border impacts on the new findings. This category takes into consideration many of the more prominent studies and presents a legal framework under UNCLOS. Special attention is paid to different scenarios that could result from this dispute. The fourth section presents the impacts of the new findings on relations between the two countries. The last section presents a summary of the findings from the previous sections and provides a basis for the research design presented in chapter 3.

## Section 1: Assessment of Oil and Natural Gas Discoveries

These discoveries, which are relatively new, have prompted the production of a large volume of research. Sources were selected to provide broad points of view. However, many official organizations, such as The United States Energy Information

Administration (EIA), the USGS, and others which have published reports on the issue, have provided detailed assessments of the discoveries in the concerned area.

In a 2010 report, the USGS estimated that the Levant Basin holds 1.7 billion barrels of undiscovered oil resources and, more considerably, 3,450 BCM of undiscovered natural gas resources.[1] According to the USGS, the new oil discovery will increase the region's reserve supply by slightly less than 70 percent and will meet regional demand for approximately 20 years at the current levels of consumption.[2] On the other hand, the new natural gas findings represent more than six times the region's current proven reserves, and could provide natural gas for the region for an indefinite period.[3]

EIA, a highly respected trusted source for reliable energy information and funded by Congress, produced a report in August 2013 entitled *the Overview of Oil and Natural Gas in the Eastern Mediterranean Region*. This report provided a detailed assessment of the oil and natural gas discoveries in the Levant Basin.[4] In Israel, the report mentioned all fields discovered from 1999 until 2011. It started with the discoveries in the southern waters (Noa in 1999 and Mari-B field in 2000), the discoveries in 2009 (Dalit and Tamar), 2010 (Leviathan), and 2011 (Aphrodite and Tanin). The EIA's report highlighted the importance of both the Tamar and Leviathan fields; the latter is considered the largest offshore discovery in the Eastern Mediterranean to date.[5]

The Israeli European Policy Network (IEPN) and the Institute for National Security Studies (INSS) issued a publication entitled *Natural Gas in the Eastern Mediterranean Casus Belli or Chance for Regional Cooperation?* in which it described the natural gas discoveries, the exploration activities, and the estimates of current discoveries.[6] The report indicates that Lebanon estimated that 708 BCM of natural gas

may be available offshore.[7] The country also has oil potential ranging from 440 to 675 million oil barrels and is currently in the process of drafting legislation to regularize its exploration.[8]

## Section 2: Implications of the New Discoveries

The EIA's report indicated that offshore natural gas discoveries in the Levant Basin will dramatically change the exited energy supply patterns in the Eastern Mediterranean Region.[9] In particular, these discoveries will transform Israel from one of the key importers of energy resources in eastern Mediterranean, to that of a major exporter, especially of natural gas, according to what Michael Hochberg predicted in his article entitled "Israel's Natural Gas Sector: A Regional Perspective."[10] Hochberg added that Israel's Leviathan field alone is believed to have tens of billions of dollars' worth of natural gas, and could be a significant advantage for Israeli domestic consumption.[11] A prediction mentioned also in the EIA's report noted that the success in Israel and Cyprus encouraged Lebanon and Israel to explore their EEZs.[12] Paul Rivlin confirmed this reality and contended that the new gas discoveries will replace the amount of gas imported from other countries and consequently reinforce the economy; thus, the region's position will be strengthened internationally.[13]

Unfortunately, the EIA's report identified several unresolved issues—including "armed conflict, territorial disputes, and macro-economic uncertainty"—that could hinder the exploration of the discoveries in the near future.[14] This conclusion goes along with what William Engdahl suggested in his article: *Israel's Levant Basin—a new Geopolitical Curse?* about new clashes over access to oil and gas resources in the Eastern Mediterranean in the Levant Basin and Aegean Sea.[15]

The Arab Center for Research and Policy Studies published a paper in 2012 entitled "The Geopolitical Impacts of the Discovery of Natural Gas in the Eastern Mediterranean Basin," in which it predicted an important change to the regional geopolitical map. Principally, Israel, Cyprus, and Greece, could cooperate together and thus open new horizons to Israel, and at the same time the Arab countries, who could see their strength decreasing more and more, given the existing unresolved problems among them.[16] This is what the Friedrich-Ebert-Stiftung and the Institute for National Security Studies predicted in their study entitled *Natural Gas in the Eastern Mediterranean: Economic Impacts and Strategic Implications*.[17] The paper expected a major role for Israel in international relations by reviving its relations with Jordan, Egypt and Turkey through the provision of gas to the European markets via Turkey and Cyprus.[18]

On the other hand, the Arab Center papers' authors argue that the Arab revolutions could modernize the political system in the Arab states, which could revive cooperation among them.[19] An example is given of possible future collaboration among the Palestinian Territories, Lebanon, and Syria after exploration of their resources as a way to face the Israeli challenges.[20]

Another aspect of these discoveries' effects is highlighted by Rivlin. Israel's gas could enable Europe to diversify energy supplies and become independent of Russian natural gas.[21] This could release Europe from Russia's intimidations, which keep Europe a prisoner of its own Russian natural gas.[22] In fact, Arthur Herman argued that Gazprom, the Russian company, supplied Europe with 25 percent of its total natural gas needs last year, and the European need is growing year after year.[23]

Recently, the annexation of the Crimea by Russia has led the European Union (EU) to begin considering other options for importing natural gas; looking to the Eastern Mediterranean, and Cyprus in particular.[24] Some predictions indicated that the additional gas demand in the EU may reach 60 BCM per year by 2020 and up to 100 BCM by 2025.[25] The European high growth demand for gas requires supply from both Israel and Cyprus.[26] However, this opportunity needs a resolution of the Cypriot question, a European country still divided into a Greek-Cypriot south and a Turkish-Cypriot north since Turkey's invasion of the island in 1974.[27]

## Section 3: Impacts of the Maritime Border Dispute

Lebanon and Israel do not agree on the maritime borders between the countries. Since the discovery of the Tamar field in the Mediterranean Sea in 2009, they disputed over a relatively small overlapping area of their EEZ; however, this small area could have a large amount of natural resources. Recently, war rhetoric elevated from both sides of the border, but legal arguments replaced the military threats.

The IEPN and the INSS publication analyzed the territorial claims for resources in the region according to the main sources of international law, the UNCLOS and customary law.[28] The publications stated that UNCLOS is considered as a suitable legal basis to settle border disputes, but that states in the region have to agree in order to delineate their maritime borders.[29] It added that Lebanon and Israel have avoided direct or even indirect negotiations to settle their disputes, and each of them submitted unilaterally what it believed to be their declared EEZ.[30]

## Section 4 : Discoveries' impact on relation between the two countries

Nizar Abdel-Kader's article *Potential Conflict between Lebanon and Israel over Oil and Gas Resources – A Lebanese Perspective* predicted different scenarios that could develop in the near future as a result of the new energy discoveries, these being: agreement between Lebanon and Israel, disagreement, or an international organization or company's management of the resources.[31] In the first scenario, the two countries would cooperate together and share the expenses of the exploration and the production of the new findings, which would be commercially feasible by avoiding duplicate installations.[32] The second scenario could cause damage to the fields, and the third scenario could divide the share of the method of unitization.[33]

## Section 5: Summary

Chapter 2 examined and reviewed various related literatures that were referred to during the investigation of this study. This literature provided the context to situate the research and summarized the recent information in the area of oil and natural gas findings in the Levant Basin and their impacts on relations between Lebanon and Israel. Reviewing the previous work written about the topic allowed the researcher to identify many gaps, that the current research will try to explore.

The most obvious one is the difference in estimating the amount of hydrocarbons. Table 1 shows different estimated amount of natural gas in the Tamar and Leviathan fields.

| Table 1. Estimated Natural Gas | | |
|---|---|---|
| | Tamar Field (BCM) | Leviathan Field (BCM) |
| EIA | 283 | 509 |
| IEPN and INSS | 275 | 480 |
| Arab Center for Research and Policy Studies | 255 | 481 |
| Ministry of Energy and Water Resources of the State of Isreal | 246 | 450 |

*Source:* Energy Information Administration (EIA), Eastern Mediterranean Region, "Overview of Oil and Natural Gas in the Eastern Mediterranean Region," last updated 15 August 2013, accessed 15 April 2014, http://www.eia.gov/countries/analysisbriefs/Eastern_Mediterranean/eastern-mediterranean.pdf; Roby Nathanson and Ro'ee, *Natural Gas in the Eastern Mediterranean Casus Belli or Chance for Regional Cooperation?* (Tel Aviv: Friedrich-Ebert-Stiftung and the Institute for National Security Studies, November 2012), accessed 30 April 2014, http://library.fes.de/pdf-files/bueros/israel/09591.pdf; Arab Center for Research and Policy Studies, "The Geopolitical Impacts of the Discovery of Natural Gas in the Eastern Mediterranean Basin," December 2012, accessed 30 April 2014, http://english.dohainstitute.org/release/b69fb5e1-b575-4ddf-a792-3aae0c3d189c; Ministry of Energy and Water Resources of the State of Isreal, "The Natural Gas Sector in Israel," accessed 30 April 2014, http://energy.gov.il/English/Subjects/Natural%20Gas/Pages/GxmsMniNGEconomy.aspx.

Another issue observed is related to the implications of the new resources. While some articles indicated that the energy findings will lead to cooperation among countries in the region, in particular between Lebanon and Israel, other researchers qualified these resources as sources of conflict.

Chapter 3 reviews the methodology used in this research study. It discusses the data collection procedures from different resources and materials. Chapter 3 also explains how data will be analyzed and how results will be interpreted.

[1] Schenk et al.

[2] Ibid.

[3] Ibid.

[4] Energy Information Administration (EIA), Eastern Mediterranean Region, "Overview of Oil and Natural Gas in the Eastern Mediterranean Region," last updated 15 August 2013, accessed 15 April 2014, http://www.eia.gov/countries/analysisbriefs/Eastern_Mediterranean/eastern-mediterranean.pdf.

[5] Ibid.

[6] Roby Nathanson and Ro'ee Levy, *Natural Gas in the Eastern Mediterranean Casus Belli or Chance for Regional Cooperation?* (Tel Aviv: Friedrich-Ebert-Stiftung and the Institute for National Security Studies, November 2012), accessed 30 April 2014, http://library.fes.de/pdf-files/bueros/israel/09591.pdf.

[7] Ibid.

[8] EIA, Eastern Mediterranean Region.

[9] Ibid

[10] Michael Hochberg, "Israel's Natural Gas Sector: A Regional Perspective," *Epoch Times*, 26 July 2014, accessed 30 April 2014, http://www.theepochtimes.com/n3/644821-israels-natural-gas-sector-a-regional-perspective/.

[11] Ibid.

[12] EIA, Eastern Mediterranean Region.

[13] Paul Rivlin, "The Significance of Gas in the East Mediterranean," *Middle East Economy* 3, no. 9 (16 October 2013), accessed 30 April 2014, http://www.dayan.org/sites/default/files/Iqtisadi_Eng_RIVLIN_EMEd_Gas_final_16102013.pdf.

[14] EIA, Eastern Mediterranean Region.

[15] William Engdahl, "Israel's Levant Basin—A New Geopolitical Curse?," Voltaire Network, 20 February 2012, accessed 30 April 2014, http://www.voltairenet.org/article172827.html.

[16] Arab Center for Research and Policy Studies, "The Geopolitical Impacts of the Discovery of Natural Gas in the Eastern Mediterranean Basin," December 2012, accessed 30 April 2014, http://english.dohainstitute.org/release/b69fb5e1-b575-4ddf-a792-3aae0c3d189c.

[17] Nathanson, Weisman, and Loewenthal.

[18] Ibid.

[19] Arab Center for Research and Policy Studies, "The Geopolitical Impacts of the Discovery of Natural Gas in the Eastern Mediterranean Basin."

[20] Ibid.

[21] Rivlin, "The Significance of Gas in the East Mediterranean."

[22] Ibid.

[23] Arthur Herman, "Israel's fortune is Putin's horror," *New York Post*, 9 February 2014, accessed 2 May 2014, http://nypost.com/2014/02/09/israels-fortune-is-putins-horror/.

[24] William Chislett, "Gas and Oil Discoveries in the Eastern Mediterranean: The Key to Europe's post-Crimea Energy Conundrum," Elcano Royal Institute, 26 March 2014, accessed 2 May 2014, http://www.blog.rielcano.org/en/gas-and-oil-discoveries-in-the-eastern-mediterranean-the-key-to-europes-post-crimea-energy-conundrum/.

[25] Nathanson, Weisman, and Loewenthal.

[26] Ibid.

[27] Chislett.

[28] Nathanson and Levy.

[29] Ibid.

[30] Ibid.

[31] Nizar Abdel-Kader, "Potential Conflict between Lebanon and Israel over Oil and Gas Resources–A Lebanese Perspective," *Defense Magazine*, 1 October 2011, 1-15.

[32] Ibid.

[33] Ibid.

# CHAPTER 3

# RESEARCH METHODOLOGY

> Not everything that can be counted counts, and not everything that counts can be counted.
>
> —Albert Einstein, santabanta.com

In order to answer the questions posed in chapter 1, the researcher used a qualitative methodology. This methodology helps to understand some of the characteristics of social life, and its methods which produce an overall narrative, rather than numbers.[1] This methodology aims to answer questions about the "what," "how" or "why" of a phenomenon rather than "how many" or "how much," which are typically answered through quantitative methods.[2]

This chapter describes this qualitative methodology and is organized into four sections. Section 1 details how data was obtained. Section 2 analyzes the credibility of sources used in the research. Section 3 identifies how data is analyzed. Section 4 includes a summary of the researcher's methodology.

## Section 1: Data Collection

In order to answer the questions posed, the researcher gathered data from secondary sources written on natural gas and oil discoveries and other relevant sources of information related to the subject. He examined documents, records and statistics, and entailed the review of books, journal articles, monographs and media articles. The sources reviewed include, but are not limited to, an array of a large reports published by specialized research centers such as the EIA, the USGS, the Friedrich-Ebert-Stiftung and the Institute for National Security Studies, Hydrocarbons Technology, and the Arab

Center for Research and Policy Studies. In addition, Lebanese, Cypriot, Israeli and international official statements, newspaper articles, and media reports on the subject were also reviewed.

The researcher used secondary sources in order to save time and money; especially in light of the fact that the key players are a great distance away and are difficult to reach for interviews. As previously mentioned, the time available for the research is not sufficient and remains a limitation. The researcher also relied on these documents to acquire general background information about the two countries studied and their relation, and from these documents, was able to postulate answers to the research questions posed. However, as some documents were incomplete or inaccurate, the researcher lost a lot of time in locating the most relevant documents that most pertinent to his topic. In fact, these are some of the disadvantages of the qualitative analysis method as reinforced by Mahoney.[3]

## Section 2: Credibility of Sources

In order to obtain the correct information needed for the study, the researcher was very meticulous in choosing credible resources. He selected documents written by authors from the two countries as a means of presenting the two points of view and to eliminate any sort of bias in his analysis; thus, as a means of attempting to remove one of the disadvantages of qualitative method. Official documents released by trusted sources were also reviewed and explored. Examples of these sources were reports from International Organizations, Governmental Institutions, Energy Ministries, and others. Additionally, the researcher carefully compared and contrasted information collected from these sources in order to verify their accuracy; especially when it concerned the

amount of natural gas and oil fields discovered in the EEZ as its relates to the countries studied in particular, and in the Levant basin in general. Lastly, the researcher considered only authors who gave a true account of the situation.

## Section 3: Data Analysis

During the research process, the researcher critically analyzed relevant data in his endeavor to find answers to the research questions; using the strengths, weaknesses, opportunities, and threat analyses (SWOT) for the energy sectors in each country. Through the information found, he was able to assess the amount of gas and oil discoveries offshore of Lebanon and Israel, to describe the implications of these resources on both countries, and to explore the disputes over their maritime borders.

The researcher identified and categorized the most important internal (Strengths and Weaknesses) and external (Opportunities and Threats) factors facing this sector in each of the two countries.[4] Strengths are the potentials that allow the country to achieve its mission.[5] They were identified for each country by answering questions such as: What are the advantages of having Israel as producer of natural gas? What does Lebanon do well in carrying on its exploration program? What do oil companies see as Lebanon's or Israel's strengths?[6] Note that strengths can be either material or immaterial.[7] For example, the strategic location of Lebanon in its proximity to Europe is considered a tangible strength for exporting natural gas. Its good relationship with its neighbors (except Israel) is also another intangible strength.

Weaknesses are the capabilities that thwart the country from achieving its mission and attaining its full potential. [8] They were found by answering questions such as: What do politicians in Lebanon do poorly in implementing the exploration program? What

could the country improve to attract investors in natural gas sector? What should the country avoid in its efforts to succeed in exploring its resources?[9] Additionally, weaknesses can be either tangible or intangible.

Opportunities are elements that the country could exploit to its advantage, while threats are elements in the environment that could cause trouble for the country.[10] Opportunities were found by answering questions like: Where are the opportunities offered to Lebanon or Israel for exporting their natural gas from Europe? Are there changes in policy related to natural gas consumption in Europe, or in the world a whole?[11] As for threats, the questions could be: What obstacles does Israel face in exporting its natural gas to Arab countries? What is the competition doing (locally or in other areas)? What is the situation on the Lebanese southern maritime border?[12]

The key output of SWOT analysis is a consolidation of the information obtained which is placed into a matrix that presents the most important strengths, weaknesses, opportunities and threats for the energy sector in the country examined in order to give a sound overview of major issues that can be taken into consideration when trying to find factors that influence the relation between the two countries studied.[13] SWOT analysis affords the researcher the best means to analyze data because of the complexity of the various actors and the difficulty in identifying the intentions of each while maintaining an unbiased perspective. Through SWOT analysis, specific objectives pertaining to each country's interests was also considered. SWOT analysis served as a guide to identify the positives and negatives inside each of the examined countries and outside of them as well. Developing a full-awareness of the situation helped to identify what could influence the relation between the two countries concerned.

The researcher used the SWOT method because it is simple and flexible, and its application does not need technical understanding and abilities.[14] However, this method does have some limitations; namely, including all factors that have to be taken into account in the analysis, or the prioritization of these factors.[15] Another limitation is the inadequate definition of factors, and the existence of several interpretations by different researchers.[16]

## Section 4: Summary

Chapter 3 discussed the methodology employed in this research study. A qualitative research based on review documents analysis was used. Data was collected from print documents and electronic sources. Data gathered before, during and after the study is analyzed using SWOT analysis in chapter 4.

---

[1] Nouria Brikci and Judith Green, "A Guide to Using Qualitative Research Methodology," Medecins Sans Frontieres, February 2007, accessed 12 September 2014, http://fieldresearch.msf.org/msf/bitstream/10144/84230/1/Qualitative%20research%20methodology.pdf.

[2] Ibid.

[3] Collen Mahoney, "Common Qualitative Methods," in *User-Friendly Handbook for Mixed Methods of Evaluation*, ed. Joy Frectling and Laure Sharp Westat (The National Science Foundation, August 1997), accessed 12 September 2014, http://www.nsf.gov/pubs/1997/nsf97153/start.htm.

[4] European Commission, Joint Research Center, "SWOT (Strengths Weaknesses Opportunities and Threats) Analysis," 2005, accessed 12 September 2014, http://forlearn.jrc.ec.europa.eu/guide/4_methodology/meth_swot-analysis.htm.

[5] Management Study Guide, "SWOT Analysis-Definition, Advantages and Limitations," 2013, accessed 12 September 2014, http://managementstudyguide.com/swot-analysis.htm.

[6] European Commission, "SWOT Analysis."

[7] Management Study Guide, “SWOT Analysis-Definition, Advantages and Limitations.”

[8] Ibid.

[9] European Commission, “SWOT Analysis.”

[10] Management Study Guide, “SWOT Analysis-Definition, Advantages and Limitations.”

[11] European Commission, “SWOT Analysis.”

[12] Ibid.

[13] Management Study Guide, “SWOT Analysis-Definition, Advantages and Limitations.”

[14] Ibid.

[15] Ibid.

[16] Ibid.

# CHAPTER 4

# ANALYSIS

## Introduction

Chapter 4 is structured into nine sections. The first section offers a brief overview of natural gas and oil in Israel. The second section outlines the implications of these resources on Israel. The next two sections address the same topics for Lebanon. The fifth section examines the legal implications of the natural gas fields through the interpretation of international maritime law and the on-going legal disputes and delimitation agreements between the countries. The sixth section examines possible ways of resolving the current disputes. SWOT analysis of the energy sectors in both countries constitutes section seven. Section 8 addresses the discoveries implications on relation between the two countries. The last section summarizes the researcher's findings.

## Section 1: Assessment of Israeli Natural Gas and Oil Discoveries

Since its founding in 1948, Israel has been almost totally dependent on fuel imports for energy. This expensive and risky situation for a country surrounded by hostile neighbors pushed Israel to search hard for energy resources. In the late 1950s, the first attempts to discover onshore petroleum began when small gas fields were discovered in the southern Judean Desert.[1] In 1969, offshore drilling started and the attempts lasted for 30 years without concrete success.[2] The reasons behind that were many. First, the quantities discovered were small and did not have commercial values. Second, national companies with little experience had the lead in exploring the resources because International Oil Companies (IOCs) did not want to upset their much bigger Arab

customers who boycotted Israeli exports at that time. Finally, the search for energy resources took place mostly onshore, rather than in offshore areas.[3]

The offshore discoveries received a boost after the signing of the Camp David Agreement between Israel and Egypt in 1979. This new situation allowed IOCs to work in both countries. With improved offshore technology, the UK's British Gas Company discovered the Noa Field off the coast of Ashkelon in 1999 (see figure 5). The Noa Field possessed 2.3 BCM and was situated in approximately 800m of water. Gas began to flow from this field in June 2012.[4] In 2000, the US Company Noble Energy discovered the first commercial field: Mari-B (see figure 5), which was approximately 250 meters deep, and contained 30 BCM. Since its discovery, the Mari-B has provided up to 40 percent of Israel's natural gas demand since 2004; however, since the start of 2013, it has begun to run out.[5] However, the small size of these discoveries in the southern waters did not satisfy IOCs; rather, they merely provided supplies to domestic markets and showed that the region has great natural gas potential.[6]

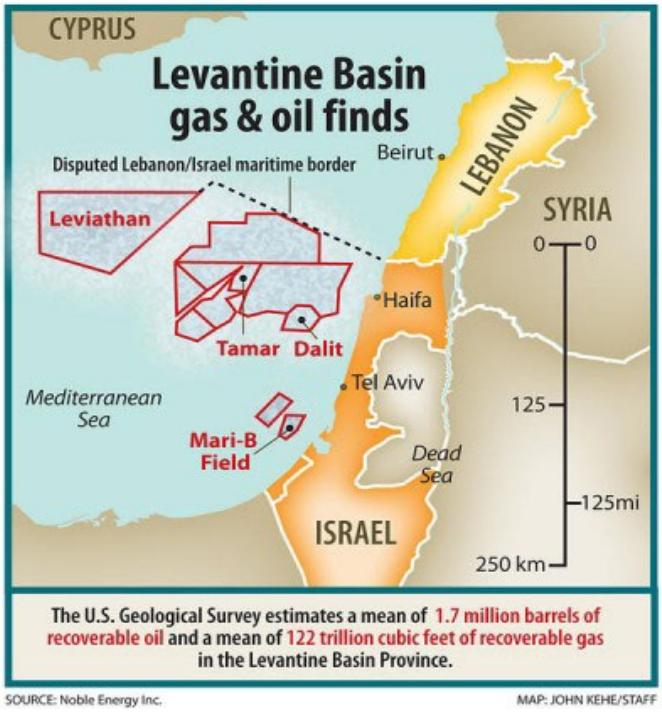


Figure 5. Israeli Natural Gas Fields

*Source:* Offshore Energy Today.com, "Noble Brings Noa North Gas Field On Stream (Israel)," accessed 30 April 2014, http://www.offshoreenergytoday.com/noble-brings-noa-north-gas-field-on-stream-israel/.

One decade later, Noble and other Israeli companies found more important fields in the northern waters (see figure 5). In 2009, they discovered Tamar Field which possessed 246 BCM; a quantity equivalent to Israel's total energy consumption over a 10-year period. The Tamar Field was located approximately 90 km west of the Israeli coast, and was situation at a depth of 1,800 meters below the surface of the sea.[7] This field, the first large-scale hydrocarbon resource discovered in the country and the largest natural-gas find in the world in that year, started production in March 2013. It supplied 40 percent of Israel's electric power, using the onshore facilities at Ashdod via a pipeline that links to existing infrastructure at the Mari-B development site.[8] As natural gas was

pumped from Tamar field for its use in the local market, the country marks its first step toward enegy indenpendance.

In 2010, Nobel Energy and the Israeli firm Delek discovered the Leviathan Field, named after the Biblical sea monster. The field is a world-scale discovery, estimated to contain 540 BCM of natural gas, making it the world's biggest deep-water gas find in a decade.[9] The field contains up to 4.3 billion barrels of oil,[10] and it is located roughly 130 kilometers west of Haifa in waters that are 1,500 meters deep in the Levantine basin. At the earliest, production could begin at the Leviathan in 2016.[11] To have a clear idea about the amount of gas that this field holds, it is estimated that the Leviathan will ensure the needs of Israel for about 100 years.[12] This new discovery is considered as a key event in Israel history. It could improve the country's strategic position and give it not only an energy independence but also making Israel a natural gas exporter.

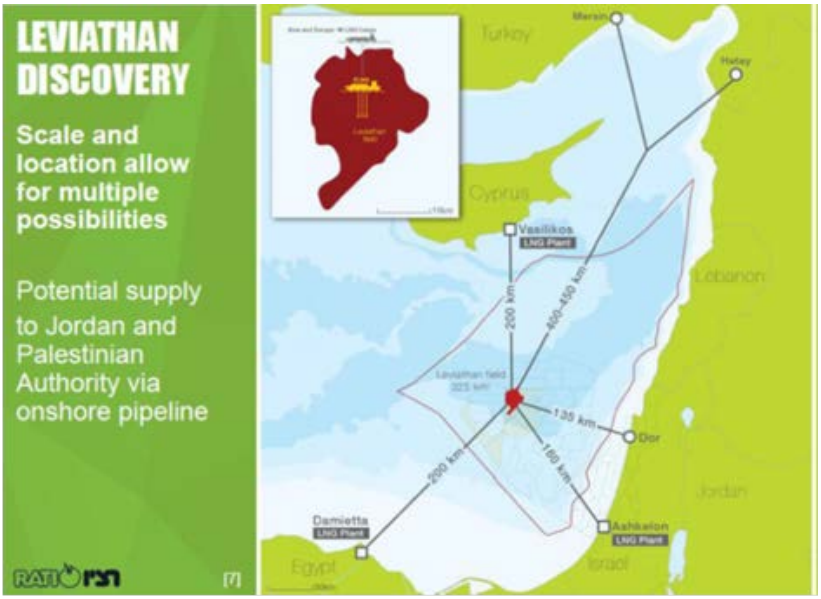


Figure 6. Israeli Leviathan Gas Field

*Source:* Gal Reiter, "Natural Gas in the Eastern Mediterranean: Conflict or Cooperation?" Modiin Energy, November 2013, accessed 30 September 2014, https://www.kcl.ac.uk/sspp/departments/warstudies/research/groups/eucers/ppt-gal-reiter-east-med-gas.pdf.

Between 2009 and 2012, Nobel Energy and its Israeli partners discovered several gas fields; the Dalit Field (7 BCM to 14 BCM) - located approximately 40 km west of Hadera at a depth of 1,200 meters; the Tanin Field - northwest of the Leviathan field (approximately 34 BCM); the Dolphin Field - southeast of the Leviathan (2.3 BCM); and the Shimshon Field - west of Ashkelon (16 BCM).[13]

Table 2 outlines some of the major Israeli discoveries of natural gas from 1999 until today, as well as the proven reserves in each of the gas fields.

| Table 2. Recent Natural Gas Discoveries in Israel | | | |
|---|---|---|---|
| **Discovery Date** | **Field Name** | **Estimated Reserves (BCM)** | **Production Date** |
| 1999 | Noa | 2.3 | 2012 |
| 2000 | Mari-B | 30 | 2004 |
| 2009 | Dalit | 7 to 14 | 2013 |
| 2009 | Tamar | 246 | 2013 |
| 2010 | Leviathan | 540 | 2016 |
| 2011 | Dolphin | 2.3 | unknown |
| 2012 | Shimshon | 16 | unknown |
| 2012 | Tanin | 34 | unknown |
| 2013 | Karish | 44 | unknown |

*Source:* Energy Information Administration (EIA), Eastern Mediterranean Region, "Overview of Oil and Natural Gas in the Eastern Mediterranean Region," last updated 15 August 2013, accessed 15 April 2014, http://www.eia.gov/countries/analysisbriefs/Eastern_Mediterranean/eastern-mediterranean.pdf; Roby Nathanson and Ro'ee Levy, *Natural Gas in the Eastern Mediterranean Casus Belli or Chance for Regional Cooperation?* (Tel Aviv: Friedrich-Ebert-Stiftung and the Institute for National Security Studies, November 2012), accessed 30 April 2014, http://library.fes.de/pdf-files/bueros/israel/09591.pdf.

As of as of January 2013, the American Central Intellengcy Agency World Factbook estimated Israel's proven reserves of natural gas stood at 268.5 BCM (ranking it 43rd worldwide) and of oil at 11.5 million barrels (ranking it 90th worldwide).

## Section 2: Implications for Israel

The discovery of natural gas off the Israeli coastline in recent years, and the prospect of more discoveries being made in the future, will impact Israel on a number of levels. These impacts constitute both opportunities and challenges for the country.

From a security perspective, the reliance on imported energy is particularly a strategic menace for Israel due to the monopoly of this sector by the members of the OPEC. Therefore, these discoveries will allow Israel to improve its energy security as it reduces its dependence on imported sources of energy for domestic use, substituting them with locally produced natural gas.[14] For instance, in 2003, Israel produced electricity by using coal and oil. In 2004, the situation changed with the entrance of natural gas into the Israeli market. In 2010, according to the Energy and Water Ministry, Israel consumed 5.3 BCM of natural gas, of which 90 percent went to electricity generation, leading to a savings of 1.4 billion dollars for the economy.[15] This shift toward natural gas presents significant benefits because natural gas is much cheaper than other energy resources and it reduces the risk of air pollution.[16]

Israel's dependence on natural gas could be risky because Israel relies on only one production treatment platform and one pipeline to deliver the gas for local consumption.[17] The gas flow could be threatened by technical problems. Another possible threat may come from nature, like earthquakes. A third danger, and perhaps most significant, is a military one. The fields are located in the southern waters (Mari-B and Noa) could be easily targeted by Hamas (in Gaza), and those in the northern waters (the Leviathan and Tamar) are within Hezbollah's missile range.[18] Realistically, the military threat of Hezbollah is minimized at present because the Shiite party is totally involved

with events in Syria, and its ally in Iran is not interested in conflict with Israel as it is in the middle of negotiations with the West regarding its nuclear program. Still, terrorist acts that could destroy a gas or oil facility by means of a crashing plane, cyber-attacks, guided missiles, Unmanned Aerial Vehicles or suicide boats at sea still exist.[19]

In order to mitigate some of these risks, the Israeli government took some preventative measures. Israel is planning to build a LNG facility that will draw natural gas supplies from the Tamar Field and the nearby Dalit Field. This would help the country in diversifying its energy sources by ensuring the continued delivery of natural gas to its economy if supplies from one of the sources are interrupted.[20] Militarily, the Israeli Navy protects offshore gas fields and installations, but with just 3 corvettes, 10 missile boats, 3 operational submarines, and 42 patrol boats; the naval fleet remains insufficient to cover the entire EEZ.[21]

Economically, Israel is facing many difficulties due to its growing prices and the degradation of salaries and social services; particularly in the housing market.[22] The domestic use of natural gas can ensure a more viable and a more sustainable economy by making industrial production cheaper and thus more competitive.[23] In addition, the growth of oil and gas exports will provide the Israeli government with a considerable source of income and could allow Israel a very high degree of financial independence.[24]

Scientific research could also benefit from the gas exploration. By searching for the best ways to use the gas in the local market, and by striving to protect gas fields and the infrastructure related to these such as pipelines, refineries, and platforms, Israeli security technology companies could develop advanced technologies.[25]

Moreover, natural gas, if used as source of power for desalination plants, could positively affect the conflict over water in the region.[26] Additionally, a bigger dependence of natural gas would decrease the CO2 emission levels.[27] However, an environmental risk resulting from offshore gas or oil drilling could be disastrous to not just Israel, but the region at large. An accident, such as a even a minor leak, could pollute Israeli beaches (which are vital to its tourist industry) and even endanger its marine natural life. The Israeli government admits that the country does not possess the experience, the tools, the control systems nor the emergency plans to prevent such kind of disasters.[28]

Finally, the gas contained by the Tamar and Leviathan Fields are large enough to allow Israel the ability to export its resources as the "Tazmach Committee," created by the Israel's Knesset in 2011 to evaluate the country's natural gas policy, recommended[29] and thus reoriented strategic alliances.[30] The Israeli Cabinet decided to export 40 percent of its production.[31] This decision is intended to make Israel a viable exporter of natural gas and thus play a positive role in the country's relationships with its neighbors such as Cyprus, Egypt, Jordan, and the Palestinians.

The economic and political relations with Cyprus have come to light lately. In February 2012, Israeli Prime Minister Benjamin Netanyahu made the first official visit by an Israeli leader ever to the island. The two countries are now planning to reach the European markets by means of a pipeline that goes through the Greek island of Crete, or by building a shared LNG plant at Vassiliko on Cyprus's southern shore.[32]

The deal signed between Israel and Jordan early this year considerably changed the economicand strategic relations between the two countries and made Israel an energy

producer and exporter that can use its position to better pursue its strategic goals.[33] In early 2014, Israel signed a natural gas sales agreement to provide Jordan with 1.6 trillion cubic feet of natural gas from the Tamar Field over a 15 year period with exports beginning in 2016.[34] Another agreement approved by the Israeli government is to supply the Palestinian Authority with natural gas from Leviathan Field once production commences in 2017.[35]

It is a zero sum game for everyone in the area, as Uzi Landau, Israel's Water and Energy Minister, believes: "exporting natural gas to Israel's neighbors will promote trust that could promote regional peace."[36] The role of the natural gas exporter is believed to be sure, knowing that the demand for natural gas is expected to grow by 1.6 percent a year and overtake coal as the second most important fuel in the world after oil.[37] Still, two factors could threaten this new role. First, it is not clear whether Israel has a viable pipeline route to the European markets through Turkey given their cold relations, which deteriorated again after the latest Gaza war. Second, the region is menaced by negative economic developments, influenced by issues such as the civil war in Syria, which could decrease demand, disturb production and trade, and lesson the feasibility of numerous hydrocarbon infrastructure projects.[38]

## Section 3: Assessment of Lebanon Undiscovered Oil and Natural Gas Resources

Lebanon has no oil or gas resources. While the country is located in the Middle East, an area historically rich in energy resources, no major oil or gas discoveries have ever been noted. Since its independence in 1943, the country started its search for oil by

drilling many wells onshore. As the result was meager and once the civil war erupted in 1975, the government cancelled the exploration licenses.

The country relies heavily on energy imports via its Mediterranean ports to meet its domestic transportation, electricity generation, heating, industry and other sector needs. In 2010, Lebanon imported 120,000 barrels per day of refined oil products, which accounted for over 90 percent of total primary energy demand in the country.[39] In addition, security issues interrupted the country supply with natural gas from Egypt via Jordan and Syria (through the AGP which transports Egyptian natural gas to Jordan and Syria and has been supplying Lebanon with gas since 2009).[40]

This situation pushed Lebanon to take a greater interest in oil and gas exploration, in particular offshore. This shift also came about because of the discovery of significant natural gas reserves off the shores of Israel near the Israeli-Lebanese border and in the Cyprus EEZ; the countries that share the same geological underwater basin with Lebanon. In August 2010 the Lebanese Parliament passed legislation concerning offshore Hydrocarbon exploration by allowing two Norwegian energy companies to conduct surveys in the Lebanese EEZ.[41] The survey estimated that the Lebanese EEZ holds 708 BCM of natural gas and from 440 to 675 million oil barrels.[42] In 2013, The Lebanese cabinet adopted a decree specifying the conditions and qualifications for companies wishing to bid for an offshore exploration license. However, political turmoil delayed the deadline for submitting bids several times, putting the process of exploration in danger. Therefore, Lebanon is unable to start extracting oil and/or gas until at least around 2018, as planned.

## Section 4: Implications for Lebanon

In Lebanon, the potential benefits from a domestic supply of gas are immediately clear; ending power shortages, wiping out Lebanon's rapidly rising public debt, reviving the economic sector, social development, and the reduction of pollution.

Locally produced natural gas is a major factor in resolving the question regarding the production of electricity in Lebanon. At present, the country suffers from daily cuts in electricity, because the demand exceeds 2,400 megawatts at peak times, while the production does not exceed 1,500 megawatts.[43] Moreover, the production is costly, in that it relies on expensive, imported fuel, mainly diesel, which causes an annual deficit of 1.5 billion dollars on the public purse and generates losses on the national economy estimated at no less than $2.5 billion dollars per year.[44] Lastly, diesel generators used locally by citizens to provide for the missing electricity are not only a financial burden, but are also a source of air pollution. This dire situation could certainly be made better by using natural gas; allowing the country to switch its power plants from imported fuel to locally sourced natural gas, and thus reducing the electric costs for consumers. Most significantly, this could even lower the power supply deficit which currently exceeds $1.9 Billion per year.[45]

Perhaps the Lebanese economic sector will benefit most from the exploitation of the new discoveries. The opportunities might contribute to an increase in sustained economic growth, increase Lebanon's Gross Domestic Product (GDP) and possibly create more opportunities for investors and direct revenues through the collection of royalties and profits from oil and gas production.[46] Furthermore, oil and gas revenues might also help Lebanon better manage its public finances by reducing the government's

expenses, and thus reduce budget deficits; especially in light of the fact that the country is encumbered with one of the highest debt rates in the world (around $52 billion or 147 percent of GDP as of November 2013).[47] Moreover, the development of gas fields might help reduce the deficit in the country's current account balance by increasing exports and/or reducing imports of other fossil fuels. Lebanon has a huge current account deficit, estimated at $12,659 million in 2013.[48] In addition, these revenues will help the industrial sector to grow and change the current situation of the Lebanese economy which relies heavily on the service sector (76 percent of GDP), while the industrial sector only accounts for 19 percent of GDP.[49] Lebanese industrialists might even benefit from a low cost energy bill by allowing their products to compete on the international markets.[50]

The discovery of gas and oil has the potential of contributing to Lebanese social development as well. The exploration and exploitation of the offshore hydrocarbon resources might create jobs, spread wealth, and reduce unemployment; which was estimated to be around 20 percent as early as 2013.[51] In fact, the Lebanese government could encourage IOCs to employ up to 80 percent of Lebanese nationals in their workforce. In addition, Lebanese merchandise could possibly benefit from a 5 percent cost incentive, and 10 percent for services provided by Lebanese companies.[52] More importantly, the Lebanese Parliament would welcome the opportunity to promote social welfare, not only for the current generation, but for future generations too.[53] The Offshore Petroleum Resources law enacted in August 2010, stipulates that "the net proceeds collected or received by a government arising out of Petroleum Activities or Petroleum Rights shall be placed in a sovereign fund."[54]

Finally, by switching to gas-generated electricity, Lebanon might also be contributing to its environmental security. In fact, natural gas is the cleanest burning fossil fuel; generating lesser amounts of greenhouse gases and pollutants per unit of energy produced than do other fossil fuels. This includes fuel oil, which is supplied to power plants producing electricity in Lebanon.[55] In addition, natural gas is proven to have an environmental advantage when compressed and when used in the transportation sector. Cars running on this type of fuel have fewer hydro-carbon emissions than any other vehicle fuel being used today.[56] This could lower the emission of toxic gases in greater Beirut, where the high level of Nitrous Oxide goes beyond the international lower limit.[57]

Lebanon faces a number of challenges that may negatively influence resource exploration and production activities and deter firms from exploring its resources despite the prospect of major finds. These challenges are mainly related to repercussions from Syria's war, political instability, corruption, and the maritime border disputes with Israel.

The conflict in Syria negatively affects Lebanon in many ways which do not reassure potential investors. The first is that the Syrian war is one of the key causes of the political impasse that the country is facing, such as the delay of the presidential election.[58] Secondly, Syria's conflict has generated gun battles, rocket attacks, car bombs and kidnappings inside Lebanon's borders. Violence between the Shiite Hezbollah party, supporter of Syrian President Bashar Assad, and its Lebanese Sunni rivals may cause further division and dispute.[59] Thirdly, the afflux of one million Syrian refugees to a small country like Lebanon further confuses the situation; especially in light of the fact that many militants are mixed with civilians while they try to take advantage of

destabilizing the security of the country.[60] As long as the war in Syria keeps going, the political and security situation in Lebanon is on the trajectory toward more destabilization.

The predominant political instability in the country could also affect foreign companies' interests in getting involved in the exploitation of offshore resources. In fact, the delicate balance existing among the main communities constituting the Lebanese population hide underlying tensions between these communities of differing religious and political loyalties. This dynamic has resulted in repeated power vacuums that have characterized the country's history and continue to manifest today.[61] The Parliament has been unable to elect a new president since 25 May 2014. This situation makes it difficult to start the exploration program. In August 2014, the Lebanese Government announced another postponement of its first licensing round to a maximum period of six months until the government is able to meet and ratify two pending decrees setting the terms of exploration and production agreements and delimitating the blocks open for bidding.[62] The repeated postponments risk deterring oil and gas majors who would seek opportunities elsewhere.[63]

Another problem facing the new resource exploration is the high level of corruption within the country. According to Transparency International, Lebanon ranked 127th out of the 177 countries assessed, which placed it among countries that has higher rate in corruption for 2013.[64] This could be an indicator that oil revenue would not be equally shared by all Lebanese.[65]

Finally, the country has little experience in the petroleum sector. Very little oil and gas developments have occurred in Lebanon since as early as 1947. Wells were

drilled in several onshore locations throughout the country, but no oil or gas was found. In addition, the only experience that Lebanon had in the petroleum sector was in refining. Lebanon was among the first in the Middle East to build oil refineries in the 1950s, but now its facilities in Zahrani and Tripoli are inoperative.[66]

It is true that Lebanon is lagging behind its neighbors in the region (Israel and Cyprus who are already either exploring for or exploiting their resources) with regard to exploration and production activities; however, the country may compensate for this through other possible strong points.

First of all, Lebanon's strategic location and its good relation with its neighbors (except for Israel) provide added value for Lebanon compared to other countries in the region.[67] Located in the vicinity of Turkey, Europe and the Suez Canal, Lebanon benefits from relative ease of access for exporting Lebanese gas to the region through the AGP, to Europe through onshore or offshore pipelines, and to the international market through LNG plants that can be built in Lebanon, jointly with other countries in the region, or by using existing plants in Egypt for example.[68] This may allow Lebanon the opportunity to play a role in supplying a portion of the regional demand, but more importantly, contribute to the diversification of gas supplies. Depending on the volume of gas that may be produced, Lebanon may be able to access the global market through LNG.[69]

Offshore exploration requires capital to extract energy reserves as well as developing the needed infrastructure for gas processing and transportation. It is true that the Lebanese government lacks capital needed for exploration activities, however the Lebanese private sector in general, and the banking sector in particular, possesses the tools suitable for this kind of investment.[70]

In addition, Lebanon has a very prestigious education system which can generate a qualified workforce and human resources. According to a 2013 World Economic Forum report, Lebanon is ranked 10th in overall quality of education, and 4th in science and math.[71] This indication might allow the country to have the skills needed to actively engage in developing the oil and natural gas sector, and also provide IOCs with less cheaper local employees, relieving them from bringing their own workforce particularly in cases of critical security status.[72]

Finally, it is worth mentioning that the Lebanese government conducted extensive and high quality 2D and 3D seismic surveys covering 100 percent (2D) and 70 percent (3D) of the Lebanese offshore areas respectively. A tally of this seismic data offers a realistic idea of natural gas and oil resources that could be discovered under the waters of the Lebanese EEZ. This could reduce the exploration phase.[73]

## Section 5: The Lebanese-Israeli Maritime Disputed Borders

This section provides first the legal framework for the border delineation process. Then it addresses the steps taken by Lebanon and Israel to define their EEZs. It also highlights the official threats posed by the use of force to protect the newly discovered natural gas fields.

The two countries have never been delineated because they have officially been at war since Israel declared independence in 1948. This on-going dispute over the shared maritime boundary could affect the two countries' abilities, and in particular Lebanon, to proceed with their offshore development plans because tensions could even make it impossible for firms to work in both countries at once. The two countries have avoided direct or even indirect negotiations to settle the maritime borders. In fact, Lebanon as

member of the Arab League, does not recognize Israel (as most of the Arab countries do not). Moreover, Israel recently rejected a compromise proposal put forward by the United States (US) on the dispute. The two countries then went to the UN to claim their rights.

UNCLOS provides the legal basis for maritime border delimitation. This process is a difficult issue and should be affected by agreements between parties through the application of international law in an attempt to achieve an equitable solution:

> The delimitation of the EEZ/Continental shelf zone between States with opposite or adjacent coasts shall be affected by agreement on the basis of international law, as referred to in Article 38 of the Statute of the International Court of Justice, in order to achieve an equitable solution.[74]

It is acknowledged that, in the absence of an agreement, delimitation should take place on the basis of the median line or the equidistance line from the baselines.[75] Further, a State should proclaim its EEZ and express its delimitation in its national laws in order to obtain sovereign rights to explore, exploit, conserve, and manage the natural resources included.[76] Article 75 provides that States must deposit charts and lists of geographical coordinates of the EEZ to the UN Secretary-General.[77] In addition, Mediterranean States should cooperate "in the exercise of their rights and in the performance of their duties" in cases of disagreement, because the Mediterranean Sea is a semi–enclosed one.[78] Finally, it is worth mentioning that Lebanon ratified UNCLOS in January 1995; unfortunately, Israel is not a party to UNCLOS. However, from a legal perspective, UNCLOS, and in particular the rules relating to maritime borders, binds all countries, including countries which have not signed it, since it has become part of customary international law.[79]

Before going to the UN to proclaim its EEZ, Lebanon started the process of the delimitation of its maritime border. The Lebanese government signed an agreement with

Cyprus that delineates its western EEZ border (see figure 7) in defining six equidistant points along a West line from South to North.[80] However, the Lebanese Parliament did not ratify this agreement due to political pressure coming from Turkey who wanted to include the Northern part of Cyprus in any agreement done by Cyprus.[81] Another reason is that Lebanon wanted to reach a free trade agreement with Turkey; which was actually signed at the end of November 2010.[82] Therefore, this non-ratified Agreement does not bind Lebanon.

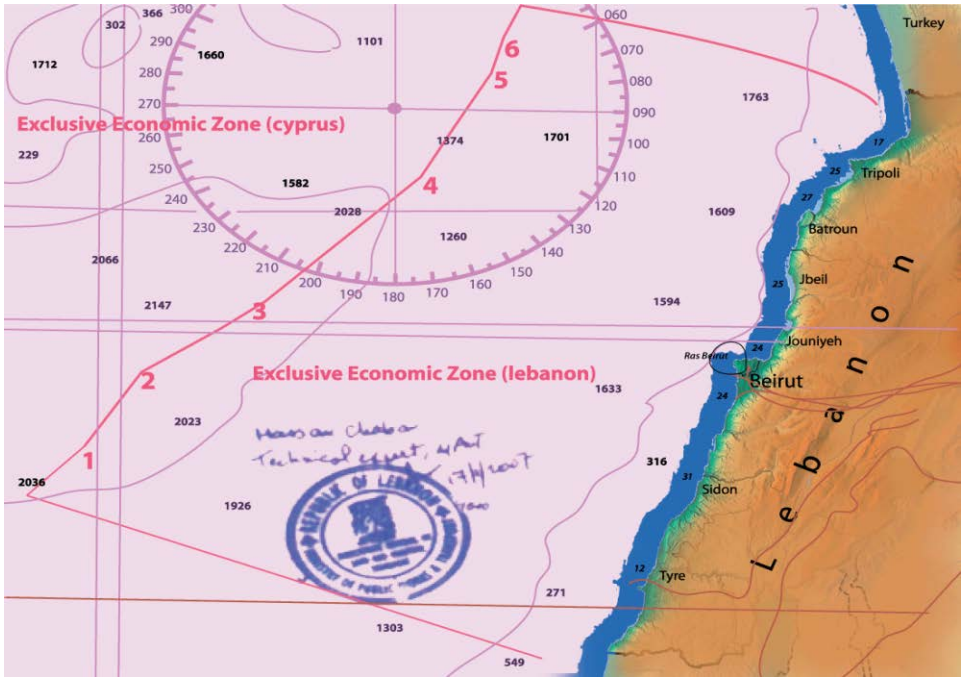


Figure 7. Lebanese EEZ borders in the Lebanese–Cyprus Agreement (2007)

*Source:* Lebanon Ministry of Public Works and Transportation, accessed 15 April 2014, http://www.nowlebanon.com/Library/Files/ArabicDocumentation/Varieties//MAP-28.jpg.

In 2010, the Lebanese government, according to Article 74 of UNCLOS, took the next step by submitting to the UN a chart of geographical coordinates defining the limits of its EEZ, in particular its southern boundary with Israel and its southwestern boundary with Cyprus.[83] This proclaimed EEZ goes north beyond point 6 and south beyond point 1 (see figure 8).

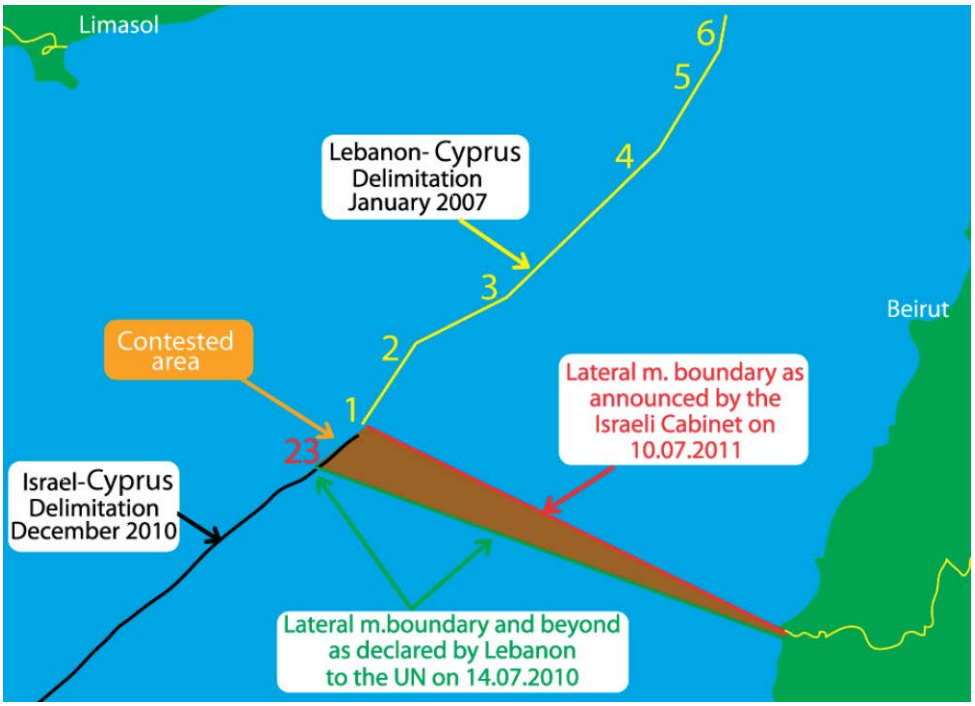


Figure 8. The contested area south-west of Lebanon's EEZ

*Source:* Offshore Border Dispute, "Oil and Gas in Lebanon," accessed 15 April 2014, http://aub.edu.lb.libguides.com/content.php?pid=339943&sid=2779271.

The boundaries depicted above added two points to the six points of 2007; Point 7 in the north and Point 23 in the south are respectively the northwest and southwest limits of the Lebanese EEZ. Point 23 is seventeen kilometers further. The speculations behind

this difference are many. One could be simply a Lebanese diplomatic mistake done during the signing of the agreement with Cyprus in 2007.[84] Another explanation, more convincing, is that the Lebanese EEZ ended before reaching the triple point since this would need the involvement of the third state concerned (Israel), to give the opportunity to reexamine the geographical points:

> In the light of future delimitation of the exclusive economic zones with other neighboring states concerned in accordance with an agreement that may be reached regarding this matter with the neighboring states concerned.[85]

For its part, Israel also began the process of defining its EEZ by signing an agreement with Cyprus on their maritime boundaries in December 2010.[86] Lebanon rejected this agreement arguing that it conflicts with Lebanon's EEZ. In fact, this agreement used similar coordinates to the Lebanon-Cyprus Maritime Agreement by taking Point 1 as the terminal point of the northern limit of the Israeli EEZ, but overlapped a surface of 850 km2 with Lebanon's rights over the maritime area according to its public delimitations at the disposal of the UN office in 2010.[87] Also, there is a provision in this agreement, similar to the one in the Lebanon-Cyprus agreement that opens the door for future modification:

> Taking into consideration the principles of customary international law relating to the delimitation of the Exclusive Economic Zone between States, the geographical coordinates of Points 1 or 12 could be reviewed and/or modified as necessary in light of a future agreement regarding the delimitation of the Exclusive Economic Zone to be reached by the three States concerned with respect to each of the said points.[88]

In July 2011, the Israeli Knesset sent a map to the UN of its maritime boundaries based on this Cyprus-Israel agreement, rejecting the EEZ's boundary deposited by Lebanon and ignoring its protest.[89] In this context, Prime Minister Binyamin Netanyahu declared:

> Lebanon's boundary declaration contradicts the line Israel has agreed upon with Cyprus, and what is more significant to me is that it contradicts the line that Lebanon itself concluded with Cyprus in 2007. We have no choice but to set the borders ourselves.[90]

Based upon the positions of both countries through the lists of geographical coordinates submitted to the UN, it is obvious that Point 1 of the Israeli list of geographical coordinates is different from Point 23 of the Lebanese list of geographical coordinates.

In June 2011, Lebanon filed a protest against the Israel-Cyprus Maritime Agreement with the UN. Another letter was sent in September 2011 to protest against the Israeli submission of its EEZ to the UN. Both letters highlighted the fact that the Israeli delimitation does not match the geographical points that Lebanon had deposited with the UN:

> Point 1 does not therefore represent the southern end of the median between the Lebanese Republic and the Republic of Cyprus that separates the exclusive economic zones of each country, and can only be viewed as a point that is shared by Lebanon and Cyprus. It is not a terminal point and therefore may not be taken as a starting point between Cyprus and any other country.[91]

The letter added that such attitudes could endanger international peace and security, and argued that Israel's coordinates violate the 1923 International Land Border established under the Paulet-Newcombe Agreement between France and Britain, and the 1949 Lebanon-Israel Armistice Line.[92] Israel, on the other hand, notes that the Paulet-Newcombe Agreement never defined a point on the coast, and there is no signed map or set of coordinates attached to the Israel-Lebanon 1949 Armistice Agreement.[93]

This contrast of proclamations and the overlapping zone between the two countries' EEZ resulted in a disputed area over 850 km2 (528 square miles), in the shape of a triangle whose western apex is the Israeli-Lebanese land border and seaward base is Israel and Cyprus EEZs (see figure8). Both sides agree that Ras al-Naqoura lies on the

common land border. However, they disagree on the angle of the line drawn from Ras al-Naqoura toward the Cyprus EEZ.[94] The area is relatively small when compared with both countries' EEZ, which totals 48,000 km2, and does not overlap with the gas fields discovered so far, in particular the Tamar and Leviathan. Nevertheless, the area may contain potentially significant hydrocarbon resources given its location near the center of the Levant Basin.[95]

It is important to note that this legal dispute was accompanied by tensions between the two countries and appeared in the speeches of several Israeli and Lebanese government officials. Lebanese politicians declared that Lebanon has the right to explore its resources:

> We emphasize that we strongly uphold our full sovereignty and economic rights over our territorial waters and exclusive economic zone as well as freedom of the exploitation of our natural resources, be they on land or in the deep sea, independently from any designs or threats.[96]

Nabih Berri, speaker of the Lebanese parliament, said in September 2012:

> We will not compromise on any amount of water from our maritime borders and oil, not even a single cup.[97]

Hezbollah has also sworn to use its weapons to defend Lebanese rights:

> Those who harm our installations will have their own installations harmed. We warn Israel not to touch this area or try to steal Lebanon's resources.[98]

Israeli officials have warned of retaliation for attacks on its oil and gas facilities, and have vowed they won't surrender any gas reserves and will use military forces to protect them:

> There is no doubt these resources are a strategic objective that Israel's enemies will try to undermine, and I have decided that Israel will defend its resources.[99]

Although the situation is not so stable on Lebanon's southern border and can quickly deteriorate, at present the Syrian war has diverted both Hezbollah and Israel for

the time being.[100] This may give a real opportunity for the Lebanese government to continue its process of extracting the resources, the allowing the revenues emerging from this sector to significantly improve the quality of life of Lebanese people, and improving the country's income. As a result, the government has the opportunity to fill the vacuum left to all parties who build much of their support on the provision of social services.

## Section 6: Options for Resolving the Boundary Dispute

> The parties to any dispute, the continuance of which is likely to endanger the maintenance of international peace and security, shall, first of all, seek a solution by negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements, or other peaceful means of their own choice.[101]

It is true that the dispute is mainly between Lebanon and Israel; however, the border between Lebanon and Cyprus is not yet resolved as the Lebanese Parliament refused to ratify the agreement which was concluded between the two countries in 2007. Therefore, Lebanon should consider renegotiating this agreement on one hand, and settle the border dispute with Israel using one of several options cited by Article 33 of the UN Charter mentioned above, knowing that Israel's and Lebanon's maritime boundary submissions to the UN are only unilateral proposals.

In light of the circumstances surrounding this question that have been detailed previously, there do not exist many options in helping to resolve it. Negotiation between Israel and Lebanon cannot be considered as they are at war and will not negotiate face-to-face. Moreover, Israel has not signed UNCLOS, in contrast to Lebanon, which means that the two countries cannot refer to any of the known judicial systems, such as the International Court of Justice, the International Tribunal for the Law of the Sea, or the

Permanent Court of Arbitration. Mediation could be the last option available. The UN, the US, or the EU could also play a major role in settling this issue.

## Section 7: Oil and Natural Gas SWOT Analysis

This section presents the new findings using SWOT analysis for Lebanon and Israel and is summarized in the following tables. These tables will identify, for each country, the energy sector potential internal strengths and weaknesses, as well as opportunities for prosperity and threats against each country. SWOT analysis exposes clear and significant strengths and weaknesses of the oil and natural gas discoveries, inherent to the findings themselves. A number of threats were revealed that may endanger the exploration program. The aim behind this study is to think about whether threats and weaknesses can be transformed into opportunities by leveraging the countries' hydrocarbon sector strengths while confronting their weaknesses.

| Table 3. Lebanese Findings using SWOT Analysis | |
|---|---|
| STRENGTHS | WEAKNESSES |
| Strategic location (close to European market) | Underdeveloped infrastructure and little experience in the petroleum sector |
| Good relation with its neighbors (except for Israel) | Political instability, factionalism, corruption, weak rule of law and low transparency, High Public debt. |
| Strong banking sector and dynamic and active private sector companies | Reliance on imported energy for electricity production and for transportation |
| Prestigious education system which can generate qualified workforce and human resources | Repeated postponing risks deterring companies who would seek opportunities elsewhere |
| Extensive and high quality 2D and 3D seismic survey were conducted which can reduce the exploration phase | Lack of experience will lead to dependence on multinational corporations, especially with the fields depths |
| Possible benefits from Hezbollah arms if put under government authority | Unable to protect its resources |
| OPPORTUNITES | THREATS |
| Current attractive prices in the LNG market | Competition and entry of new players threaten to push prices down |
| Joint use of energy infrastructure, especially with Cyprus for liquefaction or using the AGP | Maritime dispute with Israel |
| Increasing global gas demand | Environmental and Operational Risks |
| Potential demand from Europe | Situation in Syria and the influx of Syrian refugees |
| Situation in Syrian has diverted both Hezbollah and Israel | In long term, possibility for prices to decrease |

*Source:* Created by author.

Table 3 presents the Lebanon's oil and natural gas discoveries SWOT analysis. The country is well placed to export its resources as soon its politicians overcome their internal divisions and start energy production. Lebanon has a highly motivated private sector that can benefit from the high demand on gas from Europe to actively get involved in energy production. However,the Lebanese government faces many challenges related to high rate of corruption, lack of experiences, and high public dept which could hinder the exploration process. The high cost of building energy facilities will encourage the country to rely on joint projets with neighboring countries.

| Table 4. Israeli Findings using SWOT Analysis | |
|---|---|
| STRENGTHS | WEAKNESSES |
| Developed energy industry | Reliance on imported energy |
| Skilled labor | Geography (hostile surrounding ) of the country |
| Innovative high-tech sector | Economic and a social difficulties |
| Most advanced in terms of exploration and production: gas production operations commenced | Insufficient protection of energy installations especially at sea |
| Advanced military arsenal | Non redundancy of infrastructure |
| Strong institutions | Insufficient experience in handling disaster |
| OPPORTUNITES | THREATS |
| Alliance with US | Maritime dispute with Lebanon |
| Option for the joint use of energy infrastructure, especially with Cyprus | Technical problems, natural disaster (like earthquakes), military and terrorists attack. |
| Energy sufficiency, through the development of power generation facilities | Competition from other countries |
| Syria crisis may be a source diversion for Hezbollah | Environmental and Operational Risks |
| Potential Demand from Europe and Asia | Negative economic developments in the region, influenced by issues such as the the civil war in Syria, could undermine demand, interrupt production and trade, and threaten the viability of several energy infrastructure projects. |
| Increasing global gas demand | Deteriorated relation with Turkey |
| State of fragmentation and weakness of Arab | Conflict with Palestinians to continue |

*Source:* Created by author.

This table presents Israel's oil and natural gas discoveries using SWOT analysis. It reveals that the country's location among hostile neighbors is still the weakest point despite new opportunities of exporting gas to Jordan and Egypt. In terms of the country's threats, the maritime border dispute with Lebanon is highly considered. Moreover, the Syrian civil war and potential attacks from Hamas and Hezbollah on hydocarbons infrastructures are not supporting the booming growth of the country's energy sector. Still, Israel is well placed in terms of strong institutions and support from the US to seize opportunities for improving its strategic position by exporting gas to Europe and to other countries as well. The Syrian crisis, though is a source of tension in the region, could also be seen as an advantage for Israel. In fact, as Syria is unable to produce gas right now, and with Hezbollah being deeply involved in the conflict, Israel could even possibly enhance its energy sector and acquire more experience and more energy markets.

## Section 8: Discoveries' Impact on Relations between Lebanon and Israel

The new gas and oil discoveries carry tremendous potential for Lebanon and Israel. It is clear that the legal issues between the two countries need time and better circumstances in order to be resolved through peaceful means. As escalation would bring the abstention of IOCs from operating in the region as well as great risk of collusion, the prospect of cooperation between the two neighbors in the field of energy is not to be excluded, for many reasons.

First of all, cooperation is in the interests of both countries. On one hand, Israel is in a very advanced stage of exploration and production of the new resources. The country is exporting its natural gas to its neighbors, and strengthening its relationship with them. In addition, the new findings will boost economic and social developments in Israel. On

the other hand, Lebanon, which is still behind in the exploration race despite its potential to produce large quantities of natural gas, is pushing forward its efforts to exploit its share of oil and gas. The revenues from the exploitation of these national resources would provide all of the necessary funds to solve Lebanon's financial, economic, and social problems. The country could move its economy to an advanced development track and decrease its public debt.

Shared exploitation of resources can lead to political settlements and resolve the disputes between countries. The most relevant example is the EU, an alliance which was established in 1950 to put an end to the repeated and devastating wars between European neighbors, including two world wars. The idea was that cooperation among countries in the fields of the coal and steel would lead to much more cooperation and to a lasting peace. As a result, six European countries, France and Germany in particular, has started coal and steel production together as a first step to perpetually eliminate wars from Europe. This idea of shared resources production has brought political stability and economic prosperity to members of the EU, which could inspire some hope to countries in the Eastern Mediterranean region; particularly, Lebanon and Israel.

Prosperity could lead to modernization and thus, to cooperation. Extremism nurtures from poverty. Examples from the Arab countries hit by the Arab Spring illustrates well this fact. In the eastern parts of Syria, the Islamic State of Iraq and al-Sham's (ISIS) gains do not surprise experts because this region is one of the poorest in the country dues to the long time that it was neglected by the central government. Similarly, in the Sinai Peninsula of Egypt, and in Yemen's rural areas, poverty and unemployment remain major factors cultivating radicalism among militant groups. In

Lebanon, Hezbollah, who is now completely involved in the Syrian war, gained popularity among deprived Shiite populations. Once Lebanon starts natural gas and oil production, the country has great potential for developing its economy. People could possibly have greater ease in finding jobs; especially those who benefit from political parties' allocations. When people earn money and live in prosperity, history reveals that they drop their arms and leave the ranks of their militias. Moreover, politicians who support militias at present, usually change caps and follow their interests in pursuit of the revenues from newly found wealth. Modernization can win again extremism and a feeling of well-being for peoples holds the greatest potential for improving the climate and easing tensions in the overall Lebanese-Israeli conflict.

Reducing expenses through joint projects encourages cooperation. Both countries have huge enormous capacities of natural gas and oil fields in their EEZs that could not possibly be fully consumed by the Israeli and Lebanese markets alone. Therefore, to make the exploration economically practical, each country needs to find ways to export the extra quantities. Two alternatives are possible: building a pipeline or investing in a LNG plant; especially if the gas will be exported to Europe. Therefore, it is unwise or unworthy to build multiple pipelines or even multiple LNG plants because construction of such pipelines or terminals would incur enormous costs. Lebanon and Israel can, for example, bring their gas to Vasilikos in Cyprus for liquefaction and thus share costs and other tangible benefits. Another opportunity could be to use the existent AGP infrastructure that connects several Arab countries and transport gas further to multiple consumers in the region.

Regional and international players will push for cooperation between the two countries too. First, The EU is pursuing its efforts to increase its energy security and reduce reliance on Russia in the light of the Crimean crisis through diversification of gas imports. It is logical to assume that Russia will undoubtedly dialogue with Levant countries in order to create the conditions for mutual benefits from energy resources, especially knowing that the EU can offer investments, specialized technology and expertise. Second, The US is also involved in the new resources exploration through its IOCs; in particular, the Texas-based Noble Energy Company. As Noble Energy is the primary explorer in Israel, Washington has a keen interest in ensuring that the potential economic windfall in the Levant does not become an additional reason for war. The American partnership in the exploitation of such natural gas deposits, as well as oil, is considered a big incentive to mediate both current and future disputes between Israel and Lebanon. The US can (and should) assume the role of helping to defuse other potential causes for conflict, which would allow both countries to peacefully explore the hydrocarbon wealth beneath their waters, and thus present further opportunities to more US oil companies to sign exploration contracts.

## Section 9: Summary

This chapter presented and analyzed the research findings. It has underscored that Israel and Lebanon have discovered a large amount of natural gas and oil off their coasts. These discoveries have huge benefits for each country in terms of their energy security as well as economic and social development. As both countries rely on imported oil and gas, and are energy dependent, they are both interested in the potential export revenues that accompany the sizeable reserves. Israel has started exploring its resources and has

become a gas exporter with its neighbors (Jordan in particular). Lebanon is willing to benefit from the promised wealth, but political turmoil and the Syrian crisis are among many factors that prevent the country from moving ahead.

Both countries have opportunities and challenges, but the maritime dispute over a small overlapped area in their EEZs constitute a key issue. Each country has asserted its right to the reserves within their boundaries. The problem is that there are no diplomatic ties between the two countries as they formally remain at war. However, the two countries have unilaterally begun the delimitation process of its boundary. In 2007, Lebanon, signed an agreement with Cyprus on the delimitation of their EEZs, but it never ratified the agreement. Israel also delineated its EEZ with Cyprus in 2010. To protest against this agreement is considered a violation of its southern EEZ. Lebanon, thus, has unilaterally submitted lists and charts of geographical coordinates to the UN in an effort to delimit its EEZ while claiming that its boundary runs further south than specified in the agreement with Cyprus. Israel in turn submitted its own EEZ delimitation to the UN. Therefore, tensions raised between the two neighbors, and the prospects of a settlement to delimit the maritime boundaries seem to be very complicated; perhaps indicating that mediation is the only possible recourse.

Despite this tension, cooperation between the two countries is an option that should be highly considered. The two countries have submitted their dispute to the UN, which shows that the military tensions have evolved to legal arguments, and that both sides are acting rationally. In fact, it is in the interest of both countries to explore their resources in a safe and quiet environment due to the positive implications on each's economic and social sectors. Also, by sharing the exploration of their resources, Lebanon

and Israel will not only open the way for peaceful settling of their current disputes, but the will also reduce exploration expenses. In addition, the state of well-being would allow the moderate voice to transcend the radical one. Finally, regional and international players, like the EU and the US, in the pursuit of their own interests, will play a major role in fostering a greater understanding between the two countries.

The findings derived from this chapter form the foundation of the final chapter of this thesis. Chapter 5 presents the author's conclusions and recommendations for future study.

---

[1] Nathanson and Levy.

[2] Walid Khadduri, "East Mediterranean Gas: Opportunities and Challenges," *Mediterranean Politics* 17, no. 1 (March 2012): 111-117, accessed 30 April 2014, http://www.tandfonline.com/doi/abs/10.1080/13629395.2012.655049?journalCode=fmed20.

[3] Ibid.

[4] Offshore Energy Today.com, "Noble Brings Noa North Gas Field On Stream (Israel)," 25 June 2012, accessed 30 April 2014, http://www.offshoreenergytoday.com/noble-brings-noa-north-gas-field-on-stream-israel/.

[5] Ministry of Energy and Water Resources of the State of Israel, "The Natural Gas Sector in Israel," accessed 30 April 2014, http://energy.gov.il/English/Subjects/Natural%20Gas/Pages/GxmsMniNGEconomy.aspx.

[6] Khadduri, "East Mediterranean Gas: Opportunities and Challenges."

[7] Ministry of Energy and Water Resources of the State of Israel, "The Natural Gas Sector in Israel."

[8] Ibid.

[9] Ibid.

[10] Delek Group, "Delek Energy Provides Update on the Drilling at Leviathan 1 Well," 30 August 2010, accessed 10 October 2014, http://ir.delek-group.com/phoenix.zhtml?c=160695&p=irol-newsArticle&ID=1464492&highlight.

[11] Ibid.

[12] Charles Levinson and Guy Chazan, "Big Gas Find Sparks a Frenzy in Israel," *The Wall Street Journal*, 30 December 2010, accessed 30 September 2014, http://online.wsj.com/articles/SB10001424052970204204004576049842786766586.

[13] Nathanson and Levy.

[14] Arab Center for Research and Policy Studies, "The Geopolitical Impacts of the Discovery of Natural Gas in the Eastern Mediterranean Basin."

[15] Ministry of Energy and Water Resources of the State of Israel, "The Natural Gas Sector in Israel."

[16] Nathanson and Levy.

[17] Allison Good, "Defending Israel Natural's Gas," *Foreign Policy*, 13 January 2014, accessed 10 September 2014, http://mideastafrica.foreignpolicy.com/posts/2014/01/13/defending_israel_s_natural_gas.

[18] Nathanson and Levy.

[19] Good.

[20] Ministry of Energy and Water Resources of the State of Israel, "The Natural Gas Sector in Israel."

[21] Ehud Eiran and Yaval Zur, "Israel's Missing Naval Strategy," *Foreign Affairs*, 19 March 2013, accessed 10 September 2014, www.foreignaffairs.com/articles/139063/ehud-eiran-and-yuval-zur/israels-missing-naval-strategy.

[22] Gardner Patterson, "Israel's Economic Problems," *Foreign Affairs*, accessed 13 September 2014, http://www.foreignaffairs.com/articles/71088/gardner-patterson/israels-economic-problems.

[23] Arab Center for Research and Policy Studies, "The Geopolitical Impacts of the Discovery of Natural Gas in the Eastern Mediterranean Basin."

[24] Ibid.

[25] Israeli Ministry of Economy, "Israeli Technology in the Oil and Gas Sector," accessed 8 September 2004, http://www2.kenes.com/watec-israel/Documents/OilGas.pdf.

[26] Arab Center for Research and Policy Studies, "The Geopolitical Impacts of the Discovery of Natural Gas in the Eastern Mediterranean Basin."

[27] Ibid.

[28] Nathanson and Levy.

[29] Ital Trilnick and Avi Bar-El. "Tzemach Panel Would Allocate 84 percent of Gas Reserves for Export," *Haaretz*, 29 August 2012, accessed 10 September 2014, http://www.haaretz.com/business/tzemach-panel-would-allocate-84-of-gas-reserves-for-export-1.461281

[30] Ibid.

[31] Claudia Assis, "Israel Clarifies Gas Export Policy: We're Keeping 60 percent," Marketwatch, 19 June 2013, accessed 10 September 2014, http://blogs.marketwatch.com/energy-ticker/2013/06/19/israel-clarifies-gas-export-policy-were-keeping-60/.

[32] Daily Star Lebanon, "Cyprus Signs LNG Deal with US-Israeli Partnership," 26 June 2013, accessed 12 September 2014, www.dailystar.com.lb/Business/Middle-East/2013/Jun-26/221655-cyprus-signs-lng-deal-with-us-israeli-partnership.ashx#axzz2YZk5urQX.

[33] Seth J. Vogelman, "Noble Energy to Sell Leviathan Natural Gas to Jordan," Fortnightly Report, 10 September 2014, accessed 16 September 2014, http://www.atid-edi.com/index.php/publications/fortnightly/507-fortnightly-september-10-2014#22.

[34] Energy Information Administration (EIA), Israel, "Country Analysis Note," last updated March 2014, accessed 8 September 2004, http://www.eia.gov/countries/country-data.cfm?fips=is.

[35] Ibid.

[36] Billie Frenkel, "Landua: Natural Gas Market Will Promote Regional Stability," *Ynet News*, 2 April 2012, accessed 10 September 2014, http://www.ynetnews.com/articles/0,7340,L-4211087,00.html.

[37] Middle East Strategic Perspectives, "Lebanon's Gas Wealth: The Time Factor," 31 December 2013, accessed 16 September 2014, http://www.mestrategicperspectives.com/2013/12/31/lebanons-gas-wealth-the-time-factor/.

[38] Nathanson, Weisman, and Loewenthal.

[39] Energy Information Administration (EIA), Lebanon, "Country Analysis Note," last updated March 2014, accessed 8 September 2004, http://www.eia.gov/countries/country-data.cfm?fips=le.

[40] Ibid.

[41] Banque BEMO, "Hydrocarbons in Lebanon," BEMO Industry Report Issue # 1/2014, accessed 10 September 2014, http://www.bemobank.com/files/Hydrocarbons%20in%20Lebanon%20report%20February%202014.pdf.

[42] Ibid.

[43] George Sassine, “Lebanon’s Electricity Sector Between Regulation And Decentralization,” A New Vision for Lebanon, December 2012, accessed 16 September 2014, http://www.georgessassine.com/lebanon-electricity-regulation/.

[44] Gebran Bassil, “Policy Paper for the Electricity Sector,” Ministry of Energy and Water, June 2010, accessed 16 September 2014, http://www.tayyar.org/tayyar/temp/EDL_startegy.pdf.

[45] EIA, Lebanon, “Country Analysis Note.”

[46] Banque BEMO, “Hydrocarbons in Lebanon.”

[47] Ibid.

[48] Central Intelligence Agency, “Lebanon, Economy,” The World Factbook, 20 June 2014, accessed 8 September 2014, https://www.cia.gov/library/publications/the-world-factbook/geos/le.html.

[49] Ibid.

[50] Middle East Strategic Perspectives, “Lebanon’s Emerging Oil and Gas Sector: A Discussion with Energy Minister Arthur Nazarian,” 31 August 2014, accessed 8 September 2014, http://www.mestrategicperspectives.com/2014/08/31/lebanons-emerging-oil-gas-sector-discussion-energy-minister-arthur-nazarian/.

[51] Ibid.

[52] Ibid.

[53] Ibid.

[54] Lebanese Petroleum Administration, “The Offshore Petroleum Resources Law (OPRL), Article 3,” 13 January 2011, accessed 17 September 2014, http://www.lpa.gov.lb/regulations.php.

[55] Energy Information Administration (EIA), *Natural Gas 1998: Issues and Trends*, accessed 17 September 2014, http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/natural_gas_1998_issues_trends/pdf/chapter2.pdf.

[56] Compressed Natural Gas CNG Conversion Installs, “Environmental Benefits of CNG converted Vehicles,” 25 April 2013, accessed 16 September 2014, http://cngconversioninstall.com/evironmental-benefits/.

[57] Daily Star Lebanon, “Warm Weather, Weak Wind Make Beirut Air Pollution Worse: Study,” 5 February 2011, accessed 16 September 2014, http://www.daily

star.com.lb/News/Lebanon-News/2011/Feb-05/61038-warm-weather-weak-wind-make-beirut-air-pollution-worse-study.

[58] Daniel Atzori, "Levant Basin: What Lies Within?" ABO-About Oil, 20 January 2014, accessed 16 September 2014, http://www.abo.net/oilportal/interview/view.do?contentId=2189656.

[59] Ibid.

[60] Ibid.

[61] Map Action, "Lebanon, Baseline Information," 10 October 2013, accessed 16 September 2014, http://www.mapaction.org/index.php?option=com_mapcat&id=2984&view=download&fmt=pdf.

[62] Karen Ayat, "Lebanon's Oil and Gas Update is No Update at All," Natural Gas Europe, accessed 16 September 2014, 14 August 2014, http://www.naturalgaseurope.com/lebanon-oil-and-gas-update.

[63] Ibid.

[64] Transparency International, "Corruption Perceptions Index 2013," accessed 17 September 2014, http://cpi.transparency.org/cpi2013/results/.

[65] Banque BEMO, "Hydrocarbons in Lebanon."

[66] Ibid.

[67] Ibid.

[68] Middle East Strategic Perspectives, "Lebanon's Emerging Oil and Gas Sector.

[69] Ibid.

[70] Ibid.

[71] Benat Bilbao-Osorio, Soumitra Dutta, and Bruno Lanvin, eds. The Global Information Technology Report 2013, *Growth and Jobs in a Hyperconnected World*, World Economic Forum, accessed 17 September 2014, http://www3.weforum.org/docs/WEF_GITR_Report_2013.pdf.

[72] Ibid.

[73] Ibid.

[74] UNCLOS Articles 74 and 83.

[75] Swiss Association for Euro-Arab-Muslim Dialogue, "The Legal Framework of Lebanon's Maritime Boundaries: The Exclusive Economic Zone and Offshore Hydrocarbon Resources," November 2012, accessed 17 September 2014, http://bric.lebcsr.org/bric/img/LegalFramwork.pdf.

[76] UNCLOS, art. 56.

[77] Ibid., art. 75.

[78] Ibid., part IX.

[79] Swiss Association for Euro-Arab-Muslim Dialogue.

[80] Middle East Economic Survey, "Agreement between Lebanon and Cyprus on the Delimitation of the Exclusive Economic Zone," accessed 10 September 2014, http://www.mees.com/en/articles/6015-cyprus-lebanon-cyprus-israel-ofshore-delimitation.

[81] In 1974, Ankara ordered the invasion of Cyprus in order to protect the Turkish-speaking minority. Several thousand Turkish soldiers still occupy positions in the northern part of the island.

[82] Daniel Meier, "Lebanon's Maritime Boundaries: Between Economic Opportunities and Military Confrontation" (Paper, University of Oxford, June 2013), accessed 16 September 2014, http://lebanesestudies.com/wp-content/uploads/2013/10/maritime.pdf.

[83] UN Maritime Space: Maritime Zones and Maritime Delimitation, "List of Geographical Coordinates of Points," 12 July 2012, accessed 4 September 2014, http://www.un.org/depts/los/LEGISLATIONANDTREATIES/STATEFILES/LBN.htm.

[84] Hassan Lakkis, "Negotiation Blunders Jeopardize Oil and Gas Campaign," *Daily Star Lebanon*, 14 July 2011, accessed 10 September 2014, http://www.dailystar.com.lb/News/Politics/2011/Jul-14/Negotiation-blunders-jeopardize-oil-and-gas-campaign.ashx#axzz1c3mLPonW.

[85] Swiss Association for Euro-Arab-Muslim Dialogue.

[86] UN, *Agreement between the Government of the State of Israel and the Government of the Republic of Cyprus on the Delimitation of the Exclusive Economic Zone*, 17 December 2010, accessed 10 September 2014, http://www.un.org/depts/los/LEGISLATIONANDTREATIES/PDFFILES/TREATIES/cyp_isr_eez_2010.pdf.

[87] Swiss Association for Euro-Arab-Muslim Dialogue.

[88] UN, *Agreement between Israel and Cyprus*, Article 1(e).

[89] UN Maritime Space: Maritime Zones and Maritime Delimitation, "List of Geographical Coordinates for the Delimitation of the Northern Limit of the Territorial Sea and Exclusive Economic Zone of the State of Israel in WGS84," accessed 10 September 2014, http://www.un.org/depts/los/LEGISLATIONANDTREATIES/PDFFILES/isr_eez_northernlimit2011.pdf.

[90] Herb Keinon, "Cabinet Approves Northern Maritime Border," *Jerusalem Post* 10 July 2011, accessed 10 September 2014, http://www.jpost.com/NationalNews/Article.aspx?id=228666.

[91] Adnan Mansour, "Letter to the Secretary-General of the United Nation," accessed 10 September 2014, http://www.un.org/depts/los/LEGISLATIONAND TREATIES/PDFFILES/communications/lbn_re_cyp_isr_agreement2010.pdf.

[92] Ibid.

[93] Nathanson and Levy.

[94] Helmi Moussa, "US Tries to Mediate Lebanon-Israel Maritime Border Dispute," *Al-monitor*, 2 October 2013, accessed 10 September 2014, http://www.al-monitor.com/pulse/business/2013/10/lebanon-israel-gas-maritime-dispute.html.

[95] EIA, Israel, "Country Analysis Note."

[96] Michel Suleiman, "Speech at the 66th Meeting of the General Assembly in New York," 21 September 2011, accessed 10 September 2014, http://gadebate.un.org/sites/default/files/gastatements/66/LB_en.pdf.

[97] Nicholas Blanford, "U.S. Plan May Break Maritime Border Deadlock," *The Daily Star Lebanon*, 20 December 2012, accessed 12 September 2014, www.dailystar.com.lb/News/Local-News/2012/Dec-20/199184-us-plan-may-break-maritime-border-deadlock.ashx#axzz2Y0ooPJmq.

[98] Associated Press, "Hezbollah warns Israel Against 'Stealing' Gas from Lebanon," 27 July 2011, accessed 12 September 2014, http://www.haaretz.com/news/diplomacy-defense/hezbollah-warns-israel-against-stealing-gas-from-lebanon-1.375518.

[99] Nicholas Blanford, "The Next Big Lebanon-Israel Flare-Up: Gas," *Time*, 6 April 2011, accessed 12 September 2014, www.time.com/time/world/article/0,8599,2061187,00.html.

[100] Ibid.

[101] Charter of the United Nations, Chapter VI: *Pacific Settlement of Disputes*, accessed 18 September 2014, http://www.un.org/en/documents/charter/chapter6.shtml.

# CHAPTER 5

# CONCLUSIONS AND RECOMMENDATIONS

Throughout this study, the researcher began by discussing the purpose of the study; that is, to gather all the data relevant to the energy wealth in Lebanon and Israel and its implications on the two countries in light of new prospected discoveries of oil and natural gas reserves offshore. It also reviewed the question of the maritime border and the controversial positions of the two nations especially that they are in a state of war. Further, the study shed light on the prospects of rising tensions between the two neighboring countries on one hand, and the possible scenarios for cooperation on the other.

Chapter 5 summarizes and interprets the findings discussed in chapter 4. The chapter also include recommendations for potential topics for further study in light of the researcher's conclusions.

## Summary of the Findings

Israel and Lebanon have discovered a large amount of natural gas and oil off their coasts. These findings have huge benefits for each country in terms of their energy security as well as economic and social development. As both countries relied on imported oil and gas, and were considered energy dependent, they are both interested in the potential export revenues of the sizeable reserves. Israel has started exploring its resources and has become a gas exporter with its neighbors. Lebanon is willing to benefit from the promised wealth, but political turmoil and the Syrian crisis are among many factors that prevent the country from moving ahead.

## Interpretation of the Findings

Lebanon and Israel are entering a new era in their histories. They both have a hydrocarbon jackpot lying underneath their waters. As the two countries have been in a state of war since 1948, all Lebanese and Israelis generations have not known peace in their lifetimes. The opportunity is now open for people in both countries to live in peace and prosperity for the first time ever. Still, there is a long way to go, but a first step should be taken, especially now that time is a crucial factor for obtaining the optimal conditions for gas exploration and production. If exploration is delayed by the ongoing disputes, the two countries will be forced to sell their gas at a lower price, which is not in each country's best interest.

Maritime border disputes can be settled through mediation. Both Lebanon and Israel are members of the UN, and Chapter VI of the UN Charter deals with peaceful settlement of disputes likely to endanger the maintenance of international peace and security. As the two countries do not have diplomatic relations, and Israel did not ratify UNCLOS, a third party, the UN in this case, could help in marking a temporary sea boundary between them, a maritime line equivalent of the Blue Line established in 2000. It is true that the UN was reluctant to assume such a potentially difficult mission, because the demarcation of the Blue Line required tough effort in an atmosphere of mutual mistrust between Lebanon and Israel; however, more work is needed to help bring peace to that part of the world. In fact, senior officials from the Lebanese and Israeli Armed Forces, and the UNIFIL, known as the tripartite council, meet regularly to resolve any incidents accidentally happening at the border of the two countries. This allows the two

countries to communicate, which is an important element to avoiding any dispute or thwarting conflict from rising.

It is worth mentioning here that the disputed area of the basin is not the only one that can be explored. It does not represent the majority of either Israel's or Lebanon's resources. This is a small area of 850 km2 (528 square miles), equivalent to 1.7 percent of both countries' EEZ. Even if this area is rich in resources, it is not rational to endanger exploration in the whole EEZ. Just as Israel is doing right now, Lebanon can work in parallel to exploit petroleum resources at least in the blocks that are incontestably within its territorial sovereignty.

Unlike Israel, Lebanon did not start drilling its resources, which make its politicians more nervous as they see their neighbor exploring natural gas and exporting it to other countries in the region. Therefore, it is obviously in Israel's interests that Lebanon becomes involved in the energy production. This on one hand, will ease the situation and will lead to more cooperation as discussed previously, and on the other hand, would create a dissuasive situation. Any attack on one country's energy installation would bring the instant retaliation on the other country's facilities.

## Recommendations

The first recommendation concerns the peace process in the region. The International Community should strive to resolve the Arab-Israeli conflict, which could have a relaxation effect on the whole region. Consequently, tensions among Levant Basin countries will be eased resulting in more cooperation.

The second recommendation concerns the Lebanese-Israeli maritime border. Maritime borders have to be defined and agreed upon. Therefore, experts in diplomatic,

legal and military affairs should be involved in helping Lebanon and Israel successfully define their EEZs and avoid conflict.

Third, it is in the absolute interest of all Lebanese factions to transcend their internal conflicts and accelerate the exploitation of the undisputed areas. Lebanese leaders should approach the hydrocarbons discoveries practically, not emotionally.

In addition, both countries, Lebanon in particular, should plan to exploit the new findings based on resources confirmed not estimated. This would help to avoid future energy shortage similar to what is happened in Egypt. A few years ago, the country was a major natural gas exporter, in particular to Israel. Today, the Egyptian government is looking to import natural gas from Israel too, but with higher prices.

Furthermore, both countries should take safety measures in case natural gas stops to flow for whatever reason. This would be done by duplicating energy facilities such as local pipelines, and power stations.

Finally, the citizens in Lebanon and Israel also have a major role to play. The new findings have great benefits for them if they exploit it peacefully. Therefore, it is their responsibility to put pressure on their representatives to find rational ways toward solving the differences.

## Recommendation for Further Study

Undoubtedly, the implications of natural gas and oil discoveries is a topic that scholars and researchers will continue to deal with in the future. The primary focus of this paper was to determine what impacts will have the new findings on relations between Lebanon and Israel. The researcher examined numerous reasons that might lead to greater cooperation than to conflict between the two neighbors. However, the natural gas and oil

fields are common to other countries in the region such as Cyprus, Syria, Palestinian Authority or Hamas group in Gaza. Further, they will involve other countries such as Turkey and Egypt. Therefore, an important subject for future study is how the new discoveries will impact relations among these countries.

Additionally, due to time limitations, the study focused only on the two countries from the Levant region. There is also a need to clearly address the ties that exist between Lebanon and other regional players such as Iran and Saudi Arabia on one hand, and between Israel and the US on the other hand. Also, highlighting the role of Russia and the EU will help to understand the reasons behind the complexities of the Energy question.

Finally, the rise and influence of extremist groups also threaten the stability of the region. A future study on the relationship of these groups with the unsolved Arab-Israeli conflict is likely to add more insight about the challenges with which the regional countries and the international community must deal with in the future.

# BIBLIOGRAPHY


Abdel-Kader, Nizar. “Potential Conflict between Lebanon and Israel over Oil and Gas Resources–A Lebanese Perspective.” *Defense Magazine*, 1 October 2011, 1-15.

Arab Center for Research and Policy Studies. “The Geopolitical Impacts of the Discovery of Natural Gas in the Eastern Mediterranean Basin.” December 2012. Accessed 30 April 2014. http://english.dohainstitute.org/release/b69fb5e1-b575-4ddf-a792-3aae0c3d189c.

Assis, Claudia. “Israel Clarifies Gas Export Policy: We’re Keeping 60 Percent.” Marketwatch, 19 June 2013. Accessed 10 September 2014. http://blogs.marketwatch.com/energy-ticker/2013/06/19/israel-clarifies-gas-export-policy-were-keeping-60/.

Associated Press. “Hezbollah Warns Israel Against ‘Stealing’ Gas from Lebanon.” 27 July 2011. Accessed 12 September 2014. http://www.haaretz.com/news/diplomacy-defense/hezbollah-warns-israel-against-stealing-gas-from-lebanon-1.375518

Atzori, Daniel. “Levant Basin: What Lies Within?” ABO-About Oil. 20 January 2014. Accessed 16 September 2014. http://www.abo.net/oilportal/interview/view.do?contentId=2189656.

Ayat, Karen. “Lebanon’s Oil and Gas Update is No Update at All.” Natural Gas Europe, August 14, 2014. Accessed 16 September 2014. http://www.naturalgaseurope.com/lebanon-oil-and-gas-update.

Aziz, Jean. “Gas: a New Approach to the Lebanon-Israel Conflict.” *Al Monitor*, 31 December 2012. Accessed 30 April 2014. http://www.al-monitor.com/pulse/originals/2012/al-monitor/gas-lebanese-israeli-conflict.html##ixzz3DFllFW3D.

Banque BEMO. “Hydrocarbons in Lebanon.” BEMO Industry Report Issue # 1/2014. Accessed 10 September 2014. http://www.bemobank.com/files/Hydrocarbons%20in%20Lebanon%20report%20February%202014.pdf.

Bassil, Gebran. “Policy Paper for the Electricity Sector.” Lebanese Ministry of Energy and Water. June 2010. Accessed 16 September 2014. http://www.tayyar.org/tayyar/temp/EDL_startegy.pdf.

Bilbao-Osorio, Benat, Soumitra Dutta, and Bruno Lanvin, eds. The Global Information Technology Report 2013, *Growth and Jobs in a Hyperconnected World*. World Economic Forum. Accessed 17 September 2014. http://www3.weforum.org/docs/WEF_GITR_Report_2013.pdf.

Blanford, Nicholas. “U.S. Plan May Break Maritime Border Deadlock.” *The Daily Star Lebanon*, 20 December 2012. Accessed 12 September 2014. www.dailystar.com.lb/News/Local-News/2012/Dec-20/199184-us-plan-may-break-maritime-border-deadlock.ashx#axzz2Y0ooPJmq.

———. “The Next Big Lebanon-Israel Flare-Up: Gas.” *Time*, 6 April 2011. Accessed 12 September 2014. http://www.time.com/time/world/article/0,8599,2061187,00.html.

Blomberg, Thomas. “Blue Line.” United Nations Interim Force in Lebanon, 2006. Accessed 12 September 2014. http://commons.wikimedia.org/wiki/File:BlueLine.jpg.

Brikci, Nouria, and Judith Green. “A Guide to Using Qualitative Research Methodology.” Medecins Sans Frontieres, February 2007. Accessed 12 September 2014. http://fieldresearch.msf.org/msf/bitstream/10144/84230/1/Qualitative%20research%20methodology.pdf.

Carter, Jimmy. “Camp David Accords.” Encyclopedia Britannica. Accessed 30 August 2014. http://www.britannica.com/EBchecked/topic/91061/Camp-David-Accords.

Central Intelligence Agency. “Lebanon, Economy.” The World Factbook. 20 June 2014. Accessed 8 September 2014. https://www.cia.gov/library/publications/the-world-factbook/geos/le.html.

Charter of the United Nations. Chapter VI: *Pacific Settlement of Disputes*. Accessed 18 September 2014. http://www.un.org/en/documents/charter/chapter6.shtml.

Chevron Human Energy. “Liquid Natural Gas.” Accessed 30 April 2014. http://www.chevron.com/deliveringenergy/naturalgas/liquefiednaturalgas/.

Chislett, William. “Gas and Oil Discoveries in the Eastern Mediterranean: The Key to Europe’s Post-Crimea Energy Conundrum.” Elcano Royal Institute. 26 March 2014. Accessed 2 May 2014. http://www.blog.rielcano.org/en/gas-and-oil-discoveries-in-the-eastern-mediterranean-the-key-to-europes-post-crimea-energy-conundrum/.

Compressed Natural Gas CNG Conversion Installs. “Environmental Benefits of CNG Converted Vehicles.” 25 April 2013. Accessed 16 September 2014. http://cngconversioninstall.com/evironmental-benefits/.

Daily Star Lebanon. “Warm Weather, Weak Wind make Beirut Air Pollution Worse: Study.” 5 February 2011. Accessed 16 September 2014. http://www.dailystar.com.lb/News/Lebanon-News/2011/Feb-05/61038-warm-weather-weak-wind-make-beirut-air-pollution-worse-study.

———. “Cyprus Signs LNG Deal with US-Israeli Partnership.” 26 June 2013. Accessed 12 September 2014. www.dailystar.com.lb/Business/Middle-East/2013/Jun-26/221655-cyprus-signs-lng-deal-with-us-israeli-partnership.ashx#axzz2YZk5urQX.

Delek Group. “Delek Energy Provides Update on the Drilling at Leviathan 1 Well.” 30 August 2010. Accessed 10 October 2014. http://ir.delek-group.com/phoenix.zhtml?c=160695&p=irol-newsArticle&ID=1464492&highlight.

Energy Information Administration (EIA). Israel, “Country Analysis Note.” March 2014. Accessed 8 September 2004. http://www.eia.gov/countries/country-data.cfm?fips=is.

———. Lebanon, “Country Analysis Note.” March 2014. Accessed 8 September 2004. http://www.eia.gov/countries/country-data.cfm?fips=le.

———. *Natural Gas 1998: Issues and Trends*. Accessed 17 September 2014. http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/natural_gas_1998_issues_trends/pdf/chapter2.pdf.

———. Eastern Mediterranean Region, “Overview of Oil and Natural Gas in the Eastern Mediterranean Region.” Last updated 15 August 2013. Accessed 15 April 2014. http://www.eia.gov/countries/analysisbriefs/Eastern_Mediterranean/eastern-mediterranean.pdf.

Eiran, Ehud, and Yaval Zur. “Israel’s Missing Naval Strategy.” *Foreign Affairs*, 19 March 2013. Accessed 10 September 2014. www.foreignaffairs.com/articles/139063/ehud-eiran-and-yuval-zur/israels-missing-naval-strategy.

Engdahl, William. “Israel’s Levant Basin—A New Geopolitical Curse?” Voltaire Network. 20 February 2012. Accessed 30 April 2014. http://www.voltairenet.org/article172827.html.

European Commission, Joint Research Center. “SWOT (Strengths Weaknesses Opportunities and Threats) Analysis.” 2005. Accessed 12 September 2014. http://forlearn.jrc.ec.europa.eu/guide/4_methodology/meth_swot-analysis.htm.

Frenkel, Billie. “Landua: Natural Gas Market Will Promote Regional Stability.” Ynet News. 2 April 2012. Accessed 10 September 2014. http://www.ynetnews.com/articles/0,7340,L-4211087,00.html.

Good, Allison. “Defending Israel Natural’s Gas.” *Foreign Policy*, 13 January 2014. Accessed 10 September 2014. http://mideastafrica.foreignpolicy.com/posts/2014/01/13/defending_israel_s_natural_gas.

Haberman, Clyde. “The Jordan-Israel Accord: The Overview.” *New York Times*, October 2010. Accessed 30 August 2014. http://www.nytimes.com/learning/general/onthisday/big/1026.html#article.

Harris, William W. *The Levant: A Fractured Mosaic*. Princetown, NJ: Markus Wiener, 2005.

Herman, Arthur. “Israel’s Fortune is Putin’s Horror.” *New York Post*, 9 February 2014. Accessed 2 May 2014. http://nypost.com/2014/02/09/israels-fortune-is-putins-horror/

Hochberg, Michael. “Israel’s Natural Gas Sector: A Regional Perspective.” *Epoch Times*, 26 July 2014. accessed 30 April 2014. http://www.theepochtimes.com/n3/644821-israels-natural-gas-sector-a-regional-perspective/.

Hollis Daniel. “United Nations Convention on Law of the Sea (UNCLOS), 1982.” The Encyclopedia of Earth, 2013. Accessed 12 September 2014. http://www.eoearth.org/view/article/156775/.

Hydrocarbons Technology. “Arab Gas Pipeline.” Accessed 30 April 2014. http://www.hydrocarbons-technology.com/projects/arab-gas-pipeline-agp/.

Intergovernmental Panel on Climate Change. Annex I, *User Guide and Access to More Detailed Information*.” Accessed 30 April. 2014. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_appendix.pdf.

Israel Ministry of Foreign Affairs. *Israel-Syria Separation of Forces Agreement-1974*. 31 May 1974. Accessed 30 August 2014. http://mfa.gov.il/MFA/ForeignPolicy/Peace/Guide/Pages/Israel-Syria.

Israeli Ministry of Economy. “Israeli Technology in the Oil and Gas Sector.” Accessed 8 September 2004. http://www2.kenes.com/watec-israel/Documents/OilGas.pdf.

Keinon, Herb. “Cabinet Approves Northern Maritime Border.” *Jerusalem Post*, 10 July 2011. Accessed 10 September 2014. http://www.jpost.com/NationalNews/Article.aspx?id=228666.

Khadduri, Walid. “East Mediterranean Gas: Opportunities and Challenges.” *Mediterranean Politics* 17, no. 1 (March 2012): 111-117. Accessed 30 April 2014. http://www.tandfonline.com/doi/abs/10.1080/13629395.2012.655049?journalCode=fmed20.

Lakkis, Hassan. “Negotiation Blunders Jeopardize Oil and Gas Campaign.” *The Daily Star Lebanon*, 14 July 2011. Accessed 10 September 2014. http://www.dailystar.com.lb/News/Politics/2011/Jul-14/Negotiation-blunders-jeopardize-oil-and-gas-campaign.ashx#axzz1c3mLPonW.

Lebanese Petroleum Administration. *The Offshore Petroleum Resources Law (OPRL)*. 13 January 2011. Accessed 17 September 2014. http://www.lpa.gov.lb/regulations.php.

Levinson, Charles, and Guy Chazan. "Big Gas Find Sparks a Frenzy in Israel." *The Wall Street Journal*, 30 December 2010. Accessed 30 September 2014. http://online.wsj.com/articles/SB10001424052970204204004576049842786766586.

Mahoney, Collen. "Common Qualitative Methods." In *User-Friendly Handbook for Mixed Methods of Evaluation*, edited by Joy Frectling and Laure Sharp Westat. The National Science Foundation, August 1997. Accessed 12 September 2014 http://www.nsf.gov/pubs/1997/nsf97153/start.htm.

Management Study Guide. "SWOT Analysis - Definition, Advantages and Limitations." 2013. Accessed 12 September 2014. http://managementstudyguide.com/swot-analysis.htm.

Mansour, Adnan. "Letter to the Secretary-General of the United Nation." Accessed 10 September 2014. http://www.un.org/depts/los/LEGISLATIONANDTREATIES/PDFFILES/communications/lbn_re_cyp_isr_agreement2010.pdf.

MapAction.org. "Lebanon, Baseline Information." 10 October 2013. Accessed 16 September 2014. http://www.mapaction.org/index.php?option=com_mapcat&id=2984&view=download&fmt=pdf.

McKay, J. L. *The Overcomers*. Lake Mary, FL: Creation House, 2014.

Meier, Daniel. "Lebanon's Maritime Boundaries: Between Economic Opportunities and Military Confrontation." Paper, University of Oxford, June 2013. Accessed 16 September 2014. http://lebanesestudies.com/wp-content/uploads/2013/10/maritime.pdf.

Middle East Economic Survey. "Agreement between Lebanon and Cyprus on the Delimitation of the Exclusive Economic Zone." Accessed 10 September 2014. http://www.mees.com/en/articles/6015-cyprus-lebanon-cyprus-israel-ofshore-delimitation.

Middle East Strategic Perspectives. "Lebanon's Emerging Oil and Gas Sector: A Discussion with Energy Minister Arthur Nazarian." 31 August 2014. Accessed 8 September 2014. http://www.mestrategicperspectives.com/2014/08/31/lebanons-emerging-oil-gas-sector-discussion-energy-minister-arthur-nazarian/.

———. "Lebanon's Gas Wealth: The Time Factor." 31 December 2013. Accessed 16 September 2014. http://www.mestrategicperspectives.com/2013/12/31/lebanons-gas-wealth-the-time-factor/.

Ministry of Energy and Water Resources of the State of Israel. “The Natural Gas Sector in Israel.” Accessed 30 April 2014. http://energy.gov.il/English/Subjects/Natural%20Gas/Pages/GxmsMniNGEconomy.aspx.

Moussa, Helmi. “US Tries to Mediate Lebanon-Israel Maritime Border Dispute.” *Al-monitor*, 2 October 2013. Accessed 10 September 2014. http://www.al-monitor.com/pulse/business/2013/10/lebanon-israel-gas-maritime-dispute.html.

Nathanson, Roby, and Ro’ee Levy. *Natural Gas in the Eastern Mediterranean Casus Belli or Chance for Regional Cooperation?* Tel Aviv: Friedrich-Ebert-Stiftung and the Institute for National Security Studies, November 2012. Accessed 30 April 2014. http://library.fes.de/pdf-files/bueros/israel/09591.pdf.

Nathanson, Roby, Hadar Weisman, and Amit Loewenthal. *Natural Gas in the Eastern Mediterranean Economic Impacts and Strategic Implications*. Tel Aviv: Friedrich-Ebert-Stiftung and the Institute for National Security Studies, 2013. Accessed 12 September 2014. http://www.fes.org.il/src/NaturalGasEconomicImpacts2013.pdf.

OffshoreEnergyToday.com. “Noble Brings Noa North Gas Field On Stream (Israel).” 25 June 2012. Accessed 30 April 2014. http://www.offshoreenergytoday.com/noble-brings-noa-north-gas-field-on-stream-israel/.

OPEC. “Organization of the Petroleum Exporting Countries (OPEC).” Accessed 30 April 2014. http://www.opec.org/opec_web/en/index.htm.

Patterson, Gardner. “Israel's Economic Problems.” *Foreign Affairs*. Accessed 13 September 2014. http://www.foreignaffairs.com/articles/71088/gardner-patterson/israels-economic-problems.

Rivlin, Paul. “The Significance of Gas in the East Mediterranean.” *Middle East Economy* 3, no. 9 (16 October 2013). Accessed 30 April 2014. http://www.dayan.org/sites/default/files/Iqtisadi_Eng_RIVLIN_EMEd_Gas_final_16102013.pdf.

Sassine, George. “Lebanon’s Electricity Sector between Regulation and Decentralization.” A New Vision for Lebanon, December 2012. Accessed 16 September 2014. http://www.georgessassine.com/lebanon-electricity-regulation/.

Schenk, Christopher J., Mark A. Kirschbaum, Ronald R.Charpentier, Timothy R. Klett, Mickael E.Brownfield, Janet K. Pitman, Troy A. Cook, and Marilyn E. Tennyson. “Assessment of Undiscovered Oil and Gas Resources of the Levant Basin Province, Eastern Mediterranean: U.S. Geological Survey Fact Sheet, 2010-3014.” Accessed 30 April 2014. http://pubs.usgs.gov/fs/2010/3014/.

Strandenes, Sverre. “Eastern Mediterranean: An Update on Hydrocarbon Exploration.” Petroleum Geo-Services. 17 February 2014. Accessed 30 September 2014. http://www.hazliseconomist.com/uploads/speeches/2014/Sea%20of%20Europe/Sverre%20Strandenes%20PPT.pdf.

Suleiman, Michel. “Speech at the 66th Meeting of the General Assembly in New York.” 21 September 2011. Accessed 10 September 2014. http://gadebate.un.org/sites/default/files/gastatements/66/LB_en.pdf.

Swiss Association for Euro-Arab-Muslim Dialogue. “The Legal Framework of Lebanon’s Maritime Boundaries: The Exclusive Economic Zone and Offshore Hydrocarbon Resources.” November 2012. Accessed 17 September 2014. http://bric.lebcsr.org/bric/img/LegalFramwork.pdf .

Transparency International, “Corruption Perceptions Index 2013.” Accessed 17 September 2014. http://cpi.transparency.org/cpi2013/results/.

Trilnick, Ital, and Avi Bar-El. “Tzemach Panel Would Allocate 84 percent of Gas Reserves for Export.” *Haaretz*, 29 August 2012. Accessed 10 September 2014. http://www.haaretz.com/business/tzemach-panel-would-allocate-84-of-gas-reserves-for-export-1.461281.

UN Maritime Space: Maritime Zones and Maritime Delimitation. “List of Geographical Coordinates of Points.” 12 July 2012. Accessed 4 September 2014. http://www.un.org/depts/los/LEGISLATIONANDTREATIES/STATEFILES/LBN.htm.

United Nations. *Agreement between the Government of the State of Israel and the Government of the Republic of Cyprus on the Delimitation of the Exclusive Economic Zone*. 17 December 2010. Accessed 10 September 2014. http://www.un.org/depts/los/LEGISLATIONANDTREATIES/PDFFILES/TREATIES/cyp_isr_eez_2010.pdf.

———. “List of Geographical Coordinates for the Delimitation of the Northern Limit of the Territorial Sea and Exclusive Economic Zone of the State of Israel in WGS84.” Accessed 10 September 2014. http://www.un.org/depts/los/LEGISLATIONANDTREATIES/PDFFILES/isr_eez_northernlimit2011.pdf.

United Nations Division for Ocean Affairs and the Law of the Sea. “The United Nations Convention on the Law of the Sea.” Accessed 30 September 2014. http://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm.

United Nations Security Council. *Report of the Secretary-General on the United Nations Interim Force in Lebanon (for the Period from 17 January to 17 July 2000)*. 2000. Accessed 12 September 2014. http://www.un.org/en/ga/search/view_doc.asp?symbol=S/2000/718.

Vogelman, Seth J. “Noble Energy to Sell Leviathan Natural Gas to Jordan.” Fortnightly Report. 10 September 2014. Accessed 16 September 2014. http://www.atid-edi.com/index.php/publications/fortnightly/507-fortnightly-september-10-2014#22.